Wirral Cancer Equity Audit
April 2006

**Produced by the Wirral Cancer Equity Audit Group
on behalf of Wirral's Cancer Modernisation Team**

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Summary

The Wirral Cancer Equity Audit aimed to assess local data and identify whether inequities exist in Wirral in relation to the prevention, diagnosis, treatment and palliative care of cancer.

Other than breast and prostate cancers, lung and colorectal cancers are the most prevalent cancers in Wirral and are the main causes of cancer death. However, both breast and prostate cancers across Wirral show lower than expected registrations compared to the rest of England, whereas colorectal and lung cancers show higher than expected registrations. Additionally, unlike breast and prostate cancers, colorectal and lung cancers are non-gender specific, occur predominantly in the under 75s, and have known modifiable causal factors. As a result, the Wirral Cancer Equity Audit focuses upon colorectal and lung cancers.

There is considerable evidence about lifestyle factors associated with both colorectal and lung cancers, such as smoking, exposure to environmental tobacco smoke, poor nutrition and obesity. Wirral Primary Care Trusts (PCTs) have invested considerable resources in public health to tackle these issues, including the development of health improvement services that support people to make lifestyle changes, such as giving up smoking and managing weight. Whilst achieving excellent results with the clients that attend, both services demonstrate considerable inequity in access for groups such as those from black and minority ethnic groups, those from the most disadvantaged areas of Wirral and people with learning disabilities.

A cancer knowledge and awareness questionnaire identified inequities amongst certain groups in terms of access to knowledge and awareness of cancer risks, particularly amongst groups of people who are at a higher risk of developing cancer than other groups, such as those aged 50 years and over and those living in the most disadvantaged areas.

Epidemiology identifies that colorectal cancer in Wirral is not linked to deprivation for both prevalence and mortality. However, lung cancer in Wirral shows a strong relationship to deprivation. There is no apparent inequity between the least deprived and most deprived areas of Wirral in terms of the proportions of people receiving curative treatment and palliative care.

Analyses of data by ethnic group and for people with learning disabilities were not always possible because of low data recording.

This report is the first stage in the health equity audit cycle and will be followed by implementation of the numerous recommendations that have been made. A review of the equity audit will take place in 2008/2009 to determine whether the existing inequities have been removed or reduced and will recommend any further necessary action.

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Health Equity Audit

Health equity means that "all people have an equal opportunity to develop and maintain their health through fair and just access to resources for health"[1]. Potential areas of inequity include where you live, age, gender, ethnic origin and social class. The Wirral Cancer Equity Audit aims to assess how closely health need matches health provision for given areas and groups across Wirral with respect to cancer prevention, diagnosis, treatment and palliative care.

Health equity audit is a process by which local partners:
- Systematically review inequities in the causes of ill health, and in access to effective services and their outcomes, for a defined population.
- Ensure that action required is agreed and incorporated into local plans, services and practice.
- Evaluate the impact of the actions on reducing inequity.[2]

Health equity audits can:
- Inform the commissioning of services.
- Contribute to local performance management of public services.
- Support partnership working and the allocation of resources.
- Encourage community involvement in the NHS and across LSP planning.

At its best, equity audit enables PCTs to ensure that resources, both people and money, are directed towards tackling inequalities. This is an important step in moving the health inequalities agenda from the margins to centre stage[3].

This document represents the first stage in an ongoing process. The next stage will be to ensure that resources and interventions are targeted at those areas and groups found to have the greatest inequity between need and provision. The process will continue with an assessment of whether the action taken has reduced inequities and what further action, if any, is required.

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[1] Johnstone, F. Cited in: Tocque, K. *Cancer Equity Audit in Wirral: Specification for Project Plan.* (Unpublished).
[2] Jacobson, B. (2002). *Delaying Tactics.* Health Service Journal, 112, 5793, 22.
[3] Health Development Agency. (2003). *Health equity audit made simple: A briefing for primary care trusts and local strategic partnerships.* DA: London.

Wirral Population Structure and Characteristics

The GP registered population of Wirral in June 2005 was 335,001. At March 2006, this is covered by two Primary Care Trusts, Birkenhead & Wallasey PCT (population 225,664) and Bebington & West Wirral PCT (population 109,333)[*]. However, it is expected that there will be one Wirral PCT from October 2006. Wirral has a population age structure similar to that of England. See table 1:

Table 1: GP registered population in Wirral and the PCTs, by age group and gender as at 30th June 2005

Age (Years)	Wirral		BKWPCT		BWWPCT	
	Male	Female	Male	Female	Male	Female
< 15	29,927	28,166	20,913	19,742	9,014	8,424
15-49	78,493	76,280	55,382	53,541	23,111	22,738
50-74	45,672	47,043	29,362	29,330	16,309	17,712
75+	10,573	18,001	6,259	10,893	4,313	7,108

There are 846 people for whom either age group or gender is unknown. Birkenhead & Wallasey PCT has a higher proportion of younger people with 19% of males and 17% of females in the under 15 years age group compared with 17% and 15% respectively in Bebington & West Wirral PCT. Bebington & West Wirral has a higher proportion of older people with 8% of males and 13% of females in the 75 years and over age group, compared with 6% of males and 10% of females in Birkenhead & Wallasey PCT. See table 2:

Table 2: GP registered population in Wirral and the PCTs, percentage in each age group by gender as at 30th June 2005

Age (Years)	Wirral		BKWPCT		BWWPCT	
	Male	Female	Male	Female	Male	Female
< 15	18%	17%	19%	17%	17%	15%
15-49	48%	45%	49%	47%	44%	41%
50-74	28%	28%	26%	26%	31%	32%
75+	6%	11%	6%	10%	8%	13%

It is projected that the proportion of people in the older age range is going to continue to expand whilst the proportion in the younger ages will decrease.

Wirral has a small ethnic minority population. At the last census (2001) over 98% of the population was white (including Irish). Those describing themselves as Irish accounted for 1% of the population and those who were of mixed race, Asian, Black or Chinese or other ethnic group each made up less than 1%.

Map 1 shows the boundaries for the two PCTs, all wards and lower super output areas (LSOA). The thick black line shows the boundary between the PCTs with Birkenhead & Wallasey PCT in the upper part of the map and Bebington & West Wirral PCT in the lower part. The thinner black lines show ward boundaries with wards labelled and LSOA boundaries within them.

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[*] There were 4 people registered with a Wirral GP practice for whom residing PCT was not known

Map 1: Wirral PCTs, wards, and LSOA
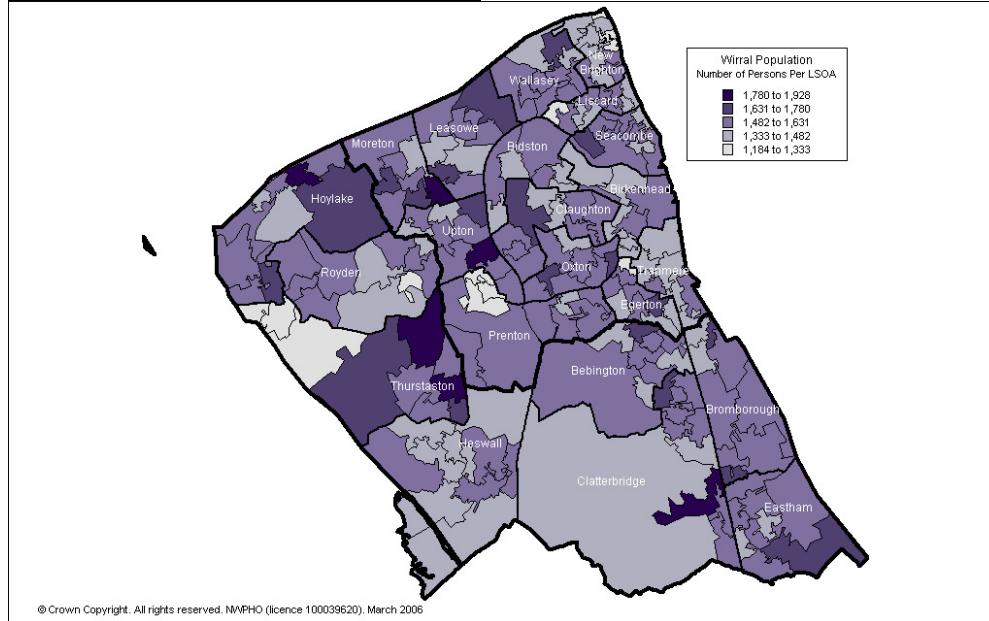
Map 2 shows national quintiles of deprivation as estimated in the Index of Multiple Deprivation (IMD 2004). This classification combines income, employment, health and disability, housing, education and skills training, and geographic access to services. The IMD 2004 for England and Wales is a Super Output Area (SOA) level measure of multiple deprivation and is made up of SOA domain indices. The IMD provides both a score and a ranking for individual LSOA, which have then been allocated to a deprivation quintile: most deprived, second most deprived, third most deprived, fourth most deprived and least deprived quintiles. It can be seen from this classification that the most disadvantaged areas are almost all in central Birkenhead and parts of Wallasey whilst the most affluent areas are almost all in Bebington & West Wirral PCT.

Map 2: National indices of multiple deprivation for Wirral LSOA level
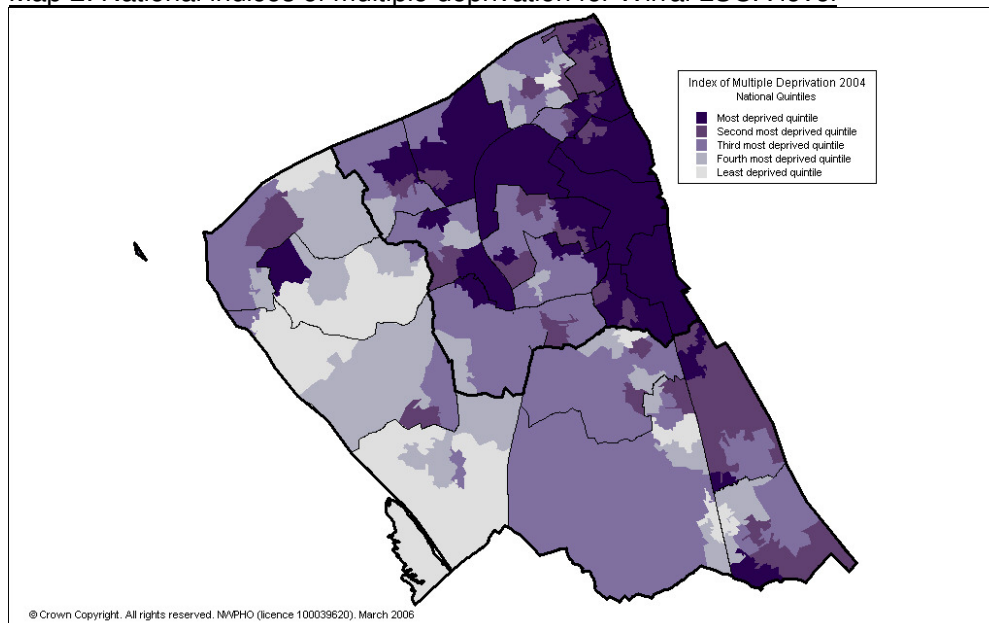
Map 3 shows the geodemographic classification of Wirral LSOA. Geodemographic classifications, which are widely used in commercial applications, cluster together local areas where resident populations have similar characteristics. They are derived using factor analysis to identify local neighbourhoods with similar characteristics primarily based on the 2001 Census. Such lifestyle groupings offer an alternative area breakdown to those of deprivation quintiles. Analyses within this report illustrate inequalities, and possible inequities, in health using the P^2 People & Places [©] lifestyle classifications (see Appendix 1). This classification has more classifications than the IMD2004 and works on a sliding scale with Mature Oaks the most affluent and Urban Challenge the least. It is based upon lifestyle rather than the measures of deprivation used in the IMD2004. Again, it can be seen from this classification that the most disadvantaged areas are almost all in central Birkenhead and parts of Wallasey whilst the most affluent areas are almost all in Bebington & West Wirral PCT.

Map 3: Geodemographic classifications for Wirral at LSOA level
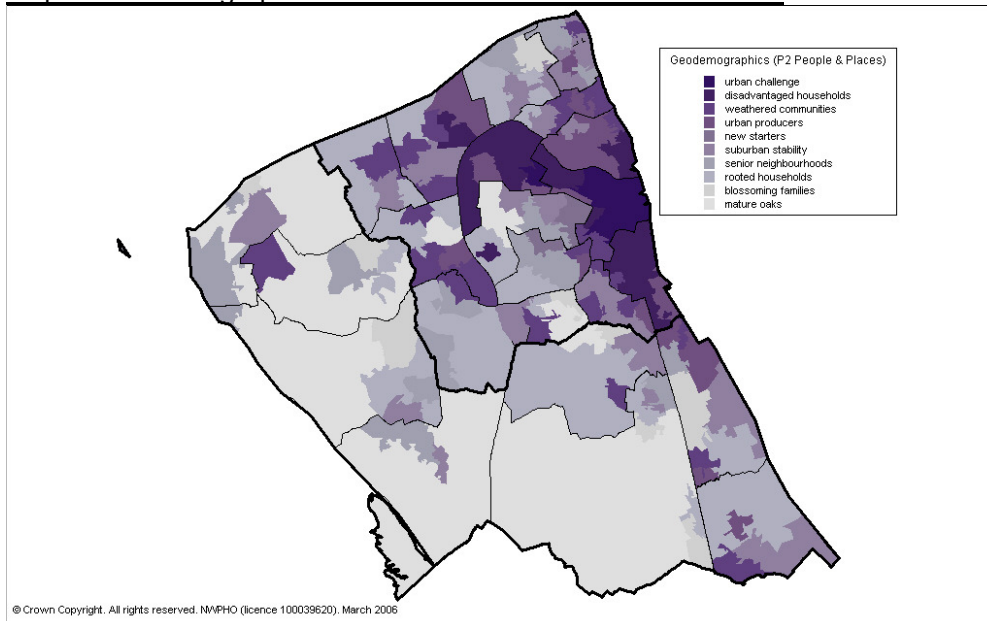
Cancer Trends

Prevalence
The four most common cancer sites diagnosed across the Wirral population mirror the regional and national picture of lung, colorectal, breast and prostate cancers. However, differences occur by geographical area. As such, the information will be provided by Birkenhead & Wallasey PCT population by sex and then by Bebington & West Wirral PCT population by sex. Data are from 2003.

Birkenhead & Wallasey
The most common cancer sites diagnosed in Birkenhead & Wallasey males (excluding non-melanoma skin cancer) are:
1. Prostate   18.6%
2. Lung   16.3%
3. Colorectal   9.7%

The most common cancer sites diagnosed in Birkenhead & Wallasey females (excluding non-melanoma skin cancer) are:
1. Breast   26.2%
2. Lung   13.6%
3. Colorectal   9.7%

Bebington & West Wirral
The most common cancer sites diagnosed in Bebington & West Wirral males (excluding non-melanoma skin cancer) are:
1. Prostate   20.9%
2. Colorectal   12.4%
3. Lung   10.0%

The most common cancer sites diagnosed in Bebington & West Wirral females (excluding non-melanoma skin cancer) are:
1. Breast   24.1%
2=. Colorectal   9.2%
2=. Lung   9.2%

Standardised Registration Ratios (SRRs)
Standard Registration Ratios (SRRs) are the ratio of the observed registrations in an area to the expected registrations. They are used to illustrate the variability in cancer incidence between different areas. In this case, the areas being compared are the two Wirral PCTs, Wirral, Cheshire & Merseyside, North-West England and the whole of England, which will have an SRR OF 100. All the data presented are taken from the Compendium of Clinical and Health Indicators (2002).

Table 3: Lung cancer SRRs

	Males	Females	Persons
England	100	100	100
North-West	115	131	122
Cheshire & Merseyside	125	146	133
Wirral	111	143	124
Birkenhead & Wallasey PCT	119	174	142
Bebington & West Wirral PCT	101	102	101

In Wirral the SRR for lung cancer is 124 which shows that registrations are 24% higher than if Wirral had the same registration rates as England. The SRR is even higher in Birkenhead & Wallasey PCT, especially for females, for whom the SRR is 174 (i.e. 74% higher than expected). The SRRs are particularly high for females across the SHA area and North West.

Table 4: Colorectal cancer SRRs

	Males	Females	Persons
England	100	100	100
North-West	106	99	103
Cheshire & Merseyside	116	97	107
Wirral	122	96	109
Birkenhead & Wallasey PCT	129	101	116
Bebington & West Wirral PCT	112	89	101

The SRRs for colorectal cancer show that in all areas males have higher than expected registrations, particularly in Birkenhead & Wallasey PCT where the SRR is 129. However, the SRRs for women are lower than expected, except in Birkenhead & Wallasey PCT where the SRR is 101.

Table 5: Prostate cancer SRRs

	Males
England	100
North-West	97
Cheshire & Merseyside	91
Wirral	77
Birkenhead & Wallasey PCT	78
Bebington & West Wirral PCT	76

The SRRs for prostate cancer show that Wirral and the PCTs have lower than expected registrations.

Table 6: Breast cancer SRRs

	Females
England	100
North-West	101
Cheshire & Merseyside	101
Wirral	97
Birkenhead & Wallasey PCT	107
Bebington & West Wirral PCT	84

For breast cancer the SRR in Wirral is low at 97 but there is a distinct difference between the PCTs. Although Bebington & West Wirral has a low SRR of 84 in Birkenhead & Wallasey PCT it is 107.

Cause of Death
The most common causes of cancer deaths across Wirral are the same as the most prevalent cancer sites. However, unspecified site is also a top three cause of death in Birkenhead & Wallasey females. This does not appear in the top three most prevalent cancers for any group. The reason for this difference is likely to be attributed to the late stage of diagnoses for these unspecified cancers.

Like prevalence, differences in causes of death occur by geographical area and by gender. As such, information is provided by Birkenhead & Wallasey PCT by sex then by Bebington & West Wirral PCT population by sex.

Birkenhead & Wallasey
In Birkenhead & Wallasey, the three most common causes of cancer deaths in males are:
1.   Lung   23.9%
2.   Colorectal   11.6%
3.   Prostate   10.3%

Birkenhead & Wallasey males are most likely to be diagnosed with prostate cancer but die from lung cancer. Colorectal is the second most likely cancer to be diagnosed with and to die from amongst this group.

The most common causes of cancer deaths in females are (not including unspecified):
1.   Lung   23.5%
2.   Breast   18.7%
3.   Colorectal   8.2%

Birkenhead & Wallasey females are more likely to be diagnosed with breast cancer but die of lung cancer. Colorectal cancer is the third most likely cancer for this group to be diagnosed with and to die from.

Bebington & West Wirral

The most common causes of cancer death in Bebington & West Wirral males are:

1.   Lung   20.4%
2.   Prostate   18.0%
3.   Colorectal   11.7%

Prostate is the most diagnosed cancer in Bebington & West Wirral males but lung cancer is the most common cause of cancer death.

In Bebington & West Wirral females, the figures are:

1.   Breast   17.6%
2.   Lung   15.2%
3.   Colorectal   10.0% [2]

Breast is the most common site for cancer and the most common cause of death in Bebington & West Wirral females. However, despite the second most prevalent cancer being colorectal, lung cancer is actually the second most common cause of death amongst this group.

The pattern is similar nationally and regionally with lung cancer being the most common cause of cancer deaths in females. The exception to this is Bebington & West Wirral PCT. See chart 1.

Chart 1: Most common causes of cancer deaths as a percentage of all cancer deaths in 2004, in females, nationally and locally
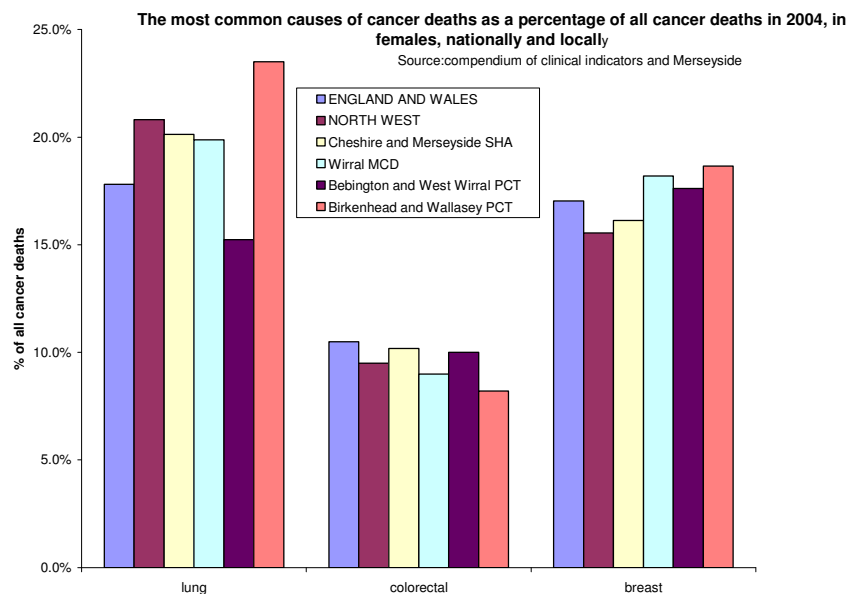
In males the most frequent cause of cancer death nationally and locally is lung cancer. In most areas prostate cancer is the second most common cause of cancer death although in Cheshire and Merseyside SHA area and in Birkenhead & Wallasey PCT colorectal cancer is the second most common cause. See chart 2.

Chart 2: Most common causes of cancer deaths as a percentage of all cancer deaths in 2004, in males, nationally and locally

The most common causes of cancer deaths as a percentage of all cancer deaths in 2004, in males, nationally and locally

Source:compendium of clinical indicators and Merseyside
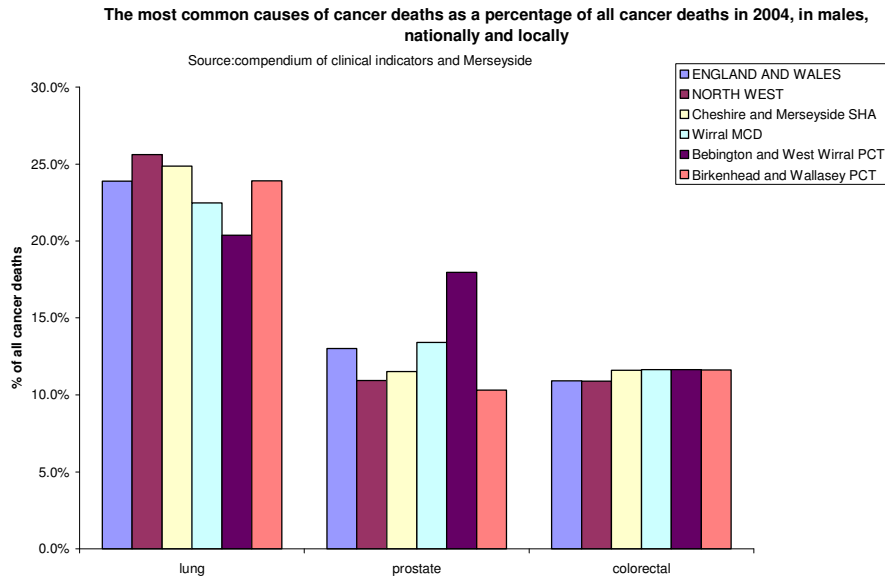
Age-Specific Incidence
The incidence of the common cancer sites differ by age and sex. For example, although breast cancer might be the most common cancer for females, it may not be the most common cancer for females of all ages. A graph and description is therefore provided for each PCT separately by sex. Unfortunately such data are not available nationally or regionally in order to make a comparison with the Wirral PCTs.

Chart 3: Male incidence of cancer in Birkenhead & Wallasey PCT
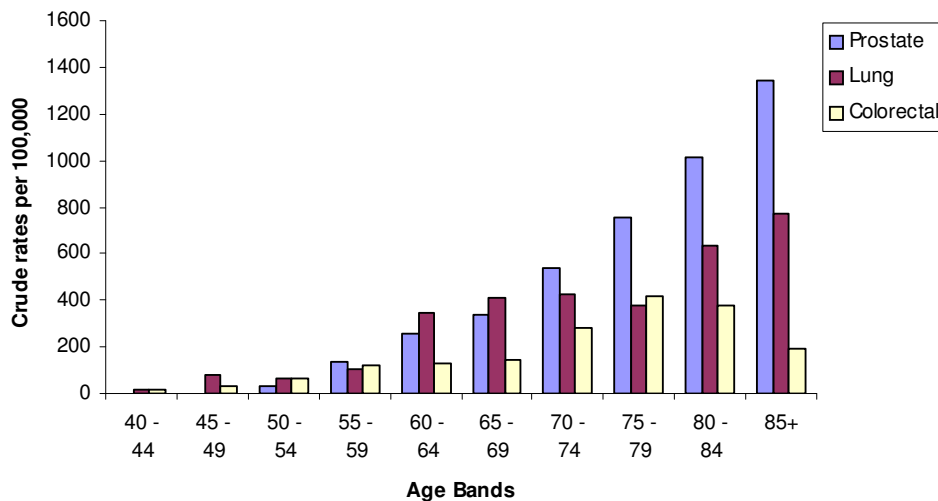
In Birkenhead & Wallasey PCT the three most common cancer sites for males are very rare before the age of 45 and none of the cancers reach an incidence of 200

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per 100,000 until the ages of 60-64 years when both lung and prostate cancer exceed this level. Lung cancer has the highest incidence amongst men in their 60's but from 70 years this is overtaken by prostate cancer which continues to rise exponentially reaching almost 1,400 cases per 100,000 population in those aged 85 years and over. Lung cancer incidence also rises with age but at a slower rate than prostate cancer reaching a peak of just under 800 cases per 100,000 population in those 85 years and over. The incidence of colorectal cancer rises more slowly than the others and reaches a peak of just over 400 cases per 100,000 population in the 75-79 years age group. It then decreases to less than half this in those aged 85 years and over.

Chart 4: Female incidence of cancer in Birkenhead & Wallasey PCT
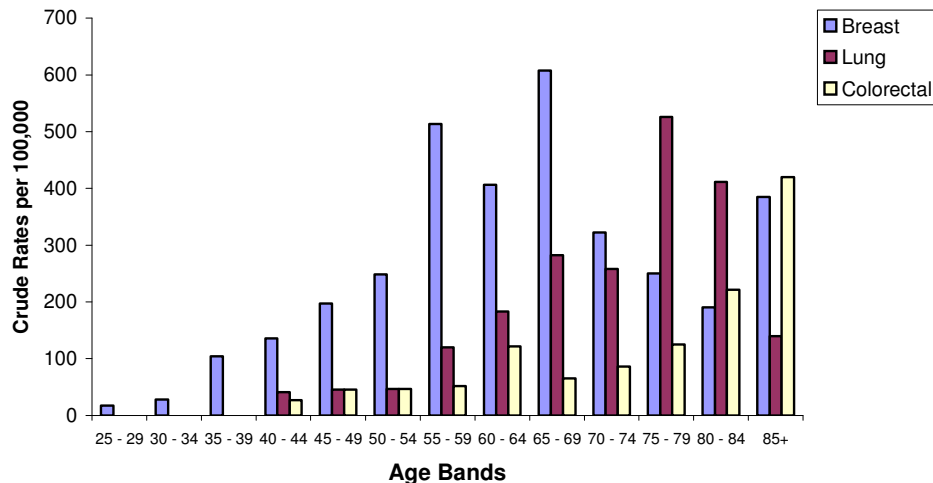
Breast cancer has the highest incidence of all cancers in Birkenhead & Wallasey females up to and including those aged 70-74 years when lung cancer incidence becomes the highest for those aged 75-84 years. In those women aged 85 years and over, colorectal cancer has the highest incidence. All cancers are very rare in those aged less than 35 years, with lung and colorectal cancers remaining rare until the age of 45 years. Breast cancer incidence increases steadily with age then suddenly peaks in those aged 55-59 years at just over 500 cases per 100,000 and again in those aged 65-69 years at just over 600 cases per 100,000. Lung cancer incidence increases gradually up to a peak of over 500 cases per 100,000 population in those aged 75-79 years. Colorectal cancer incidence increases more slowly than the lung and breast cancers but increases sharply in those aged over 80 years reaching a peak of over 400 cases per 100,000 population in those aged 85 years and over.

Chart 5: Male incidence of cancer in Bebington & West Wirral PCT
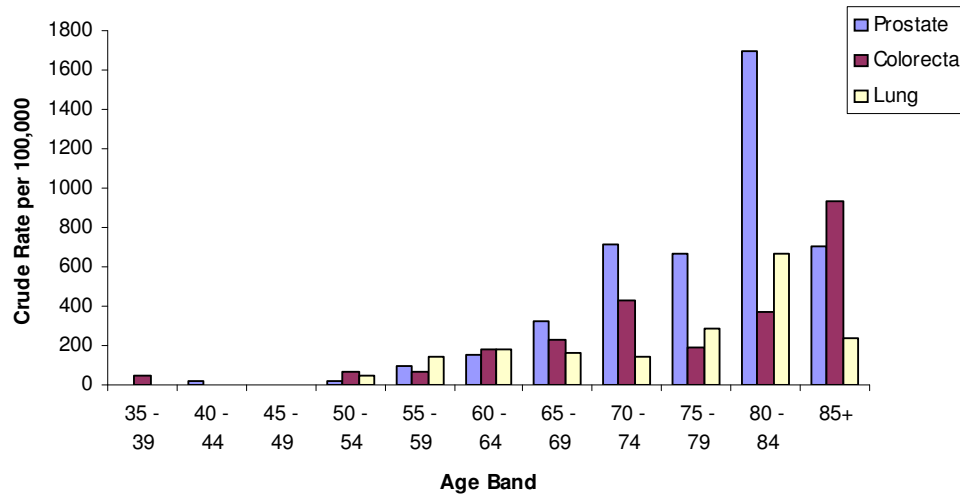
The three most common cancers amongst Bebington & West Wirral males are all very rare under the age of 55 years and none of the cancers reach an incidence of 200 cases per 100,000 until prostate and colorectal do at ages of 65-69 years. Colorectal cancer remains below this incidence until ages 75-79 years. Prostate cancer has the highest incidence in men aged 65-84 years reaching a peak of approximately 1,700 cases per 100,000 population in the 80-84 years group and then decreasing dramatically to approximately 700 cases per 100,000 in those aged 85 years and over. Lung cancer incidence increases steadily reaching a peak of over 600 cases per 100,000 population in 80-84 year old males. Similarly colorectal cancer incidence increases steadily with age reaching a peak of over 900 cases per 100,00 in those aged 85 years and over, amongst whom it has the highest incidence of all cancers.

Chart 6: Female incidence of cancer in Bebington & West Wirral PCT
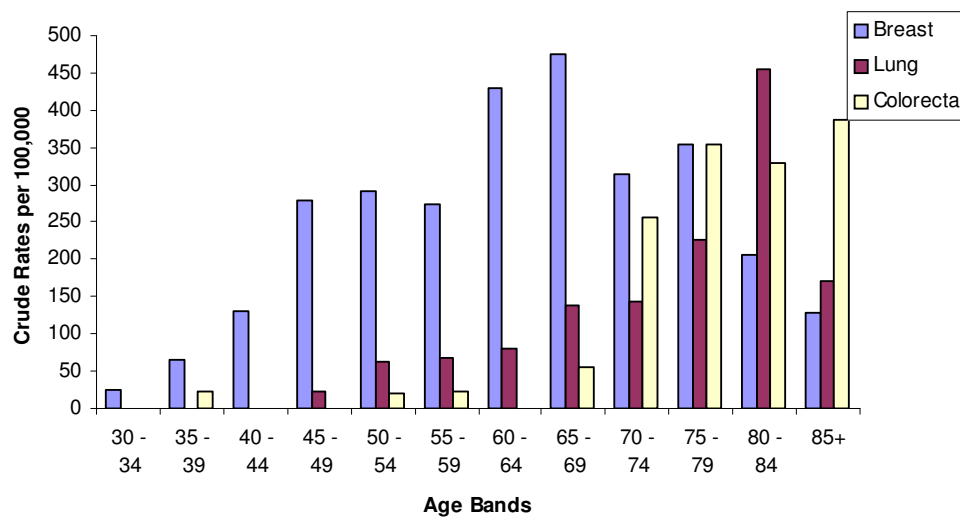
Breast cancer has the highest incidence of all cancers in Bebington & West Wirral females up to the ages of 75-79 years reaching a peak of approximately 475 cases

per 100,000 in the 65-69 years age group. It then gradually decreases with age. Lung cancer gradually increases with age reaching a sharp peak in women aged 80-84 years at over 450 cases per 100,000 population then decreases sharply in those aged 85 years and over. Colorectal cancer has a very low incidence then suddenly increases at ages 70-74 years increasing to a peak in women aged 85 years and over of just under 400 cases per 100,000.

Burden of Disease
Standardised Illness Ratios and Standardised Rates
This section of the report contains information from Merseyside and Cheshire Cancer Registry (MCCR) and Hospital Episode Statistics (HES) data sets which is presented as Standardised Illness Ratios or Standardised Rates.

Standardised Illness Ratios (SIR) are based on a Wirral average of 100 and the calculation adjusts for differences in the age and sex structure of the population in any given area. Where a Wirral lower super output area (LSOA) has a score of over 100 this indicates that an area has a ratio above the Wirral average for the stated cancer. For example, an area with a score of 140 has 40% more occurrences of the cancer than the Wirral average. Similarly, any score under 100 indicates an area which has experienced a lower than average occurrence of the cancer.

Standardised rates are calculated by applying local age-specific rates to the European Standard Population, and are expressed as persons with the condition per 100,000 people. The Standardised Rates are shown with 95% Confidence Intervals (CI). CI are calculated using a normalised approximation modified from the binomial variance for a proportion to estimate variances of the crude age-specific rates.

SIRs, standardised rates and the standardised mortality ratios, shown later in the report, have been summarised by the inequality-identifying gradients: deprivation quintile and a geodemographic lifestyle classification to identify patterns across Wirral that may warrant further investigation. Additional detail on the methods and calculations used can be found in Appendix 2.

Merseyside and Cheshire Cancer Registry prevalence by deprivation and geodemographics
This section of the report presents SIRs and standardised rates using MCCR data from 1998 to 2003.

Map 4: MCCR standardised illness ratios of colorectal cancer by LSOA
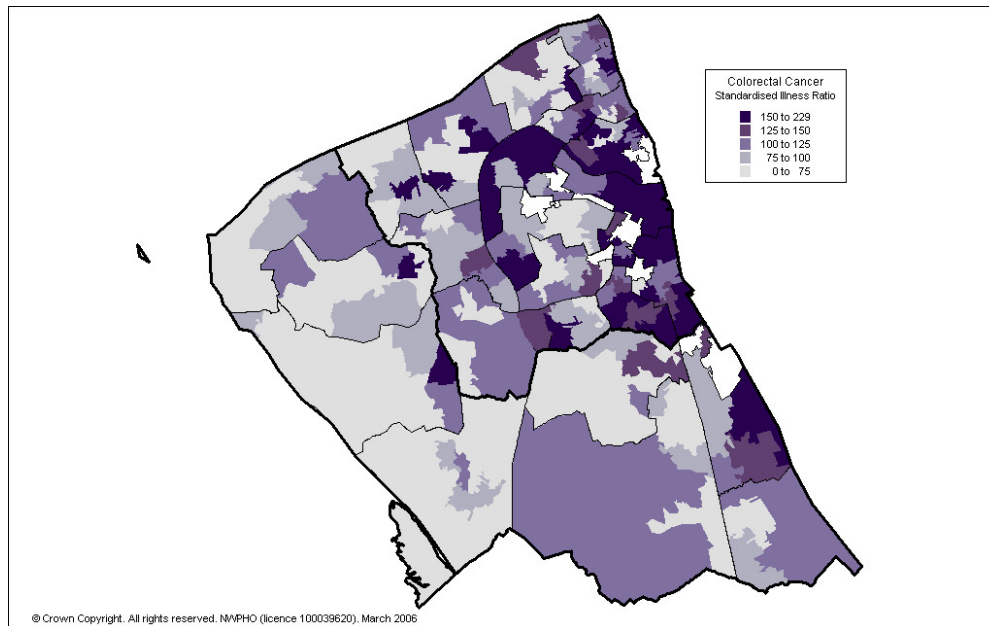
Map 4 presents colorectal SIRs and does not show any real geographic concentration and has no strong link to deprivation. With below average prevalence of colorectal cancer in areas of most deprivation (Tranmere) and least deprivation (Clatterbridge), and a similar, general, spread in areas of high prevalence, we can see no strong relationship between colorectal cancer and deprivation (which is illustrated in Map 2).

Chart 7: MCCR standardised rates of colorectal cancer prevalence by National IMD (2004) quintile
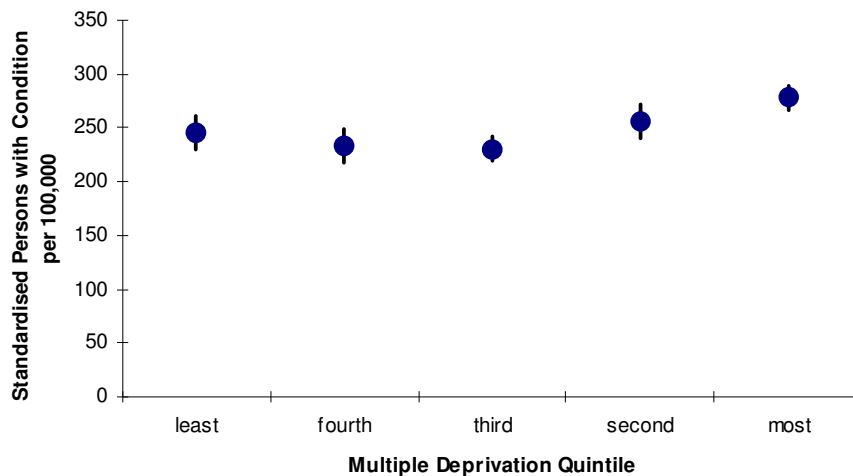
Chart 7 does not demonstrate any wide variation in colorectal cancer prevalence rates by deprivation, with no clear link between colorectal cancer prevalence rates and deprivation. The third most deprived quintile has the lowest rates (230 per 100,000), although there is an increase from the least deprived quintile (245 per 100,000) to the most deprived quintile (278 per 100,000).

Chart 8: MCCR standardised rates of colorectal cancer prevalence by geodemographics

'People & Places' locality categorisation
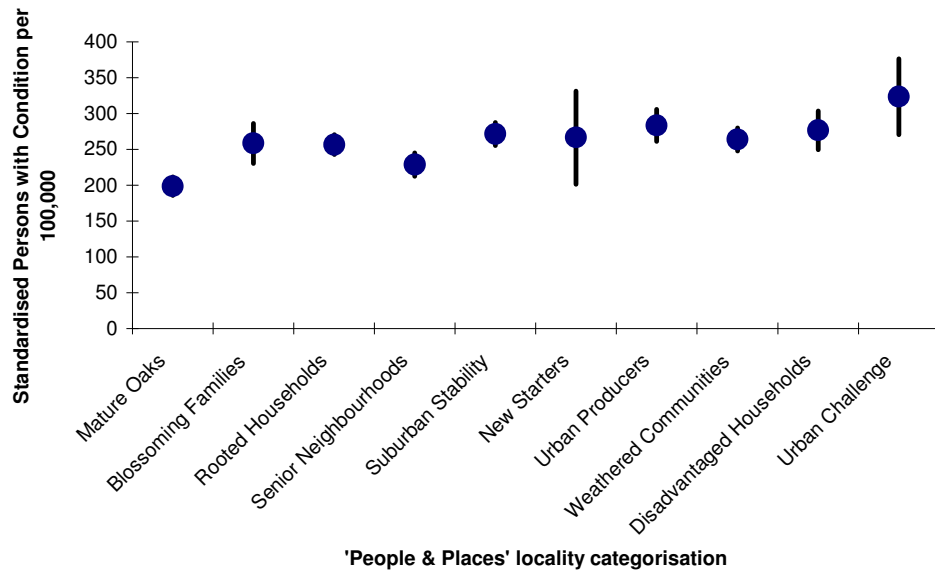
Chart 8 shows the standardised colorectal cancer rates by geodemographic groups. Again there is a lower rate in the least deprived group, Mature Oaks, to the most deprived group, Urban Challenge, but with no constant trend as deprivation increases. The most interesting result is that New Starters (267 per 100,000) have higher rates than Senior Neighbourhoods (229 per 100,000). Although New Starters, as a group, have greater deprivation than Senior Neighbourhoods, they do contain a high proportion of students and highly qualified young adults. The wide CI for New Starters are due to the small numbers of people living in this category in Wirral. With colorectal cancer strongly related to age, we might have expected Senior Neighbourhoods to have higher rates of colorectal cancer, as they have a high proportion of pensioners and old people.

Map 5: MCCR standardised illness ratios of lung cancer by LSOA
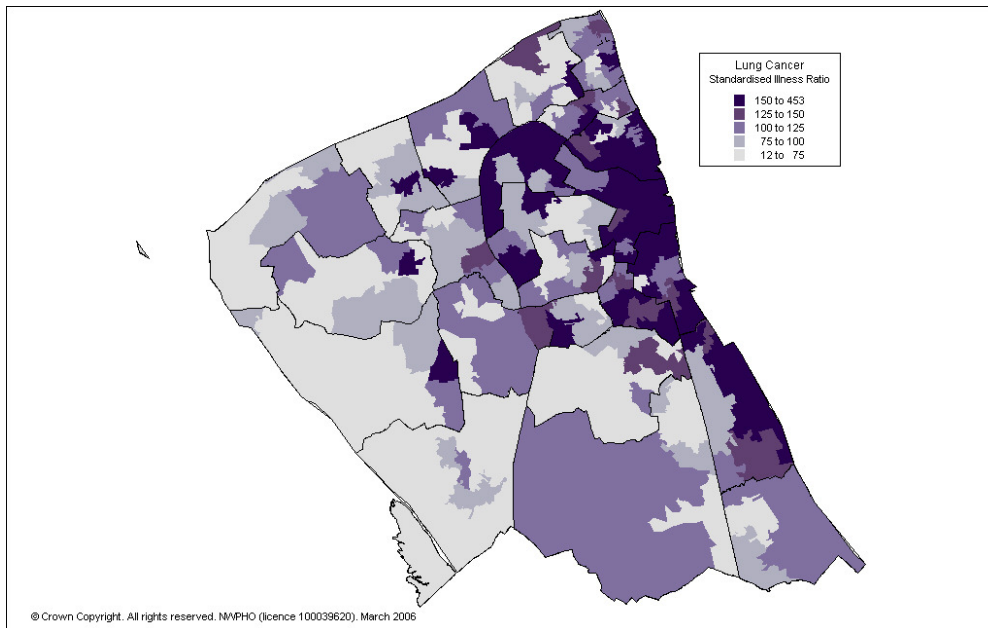
From Map 5, you can see a clear link between lung cancer and deprivation (which is illustrated in Map 2) with areas of Bidston, Tranmere and the whole of Birkenhead above the Wirral average. With the less deprived, such as large areas of Heswall, having generally lower than average prevalence it can be seen that there is a strong relationship between greater deprivation and increased incidence of lung cancer. This is highlighted by the highest ratio of 453 being found in an area of Seacombe, which is in the most deprived national quintile and Urban Challenge geodemographic group.

Chart 9: MCCR standardised rates of lung cancer prevalence by National IMD (2004) quintile
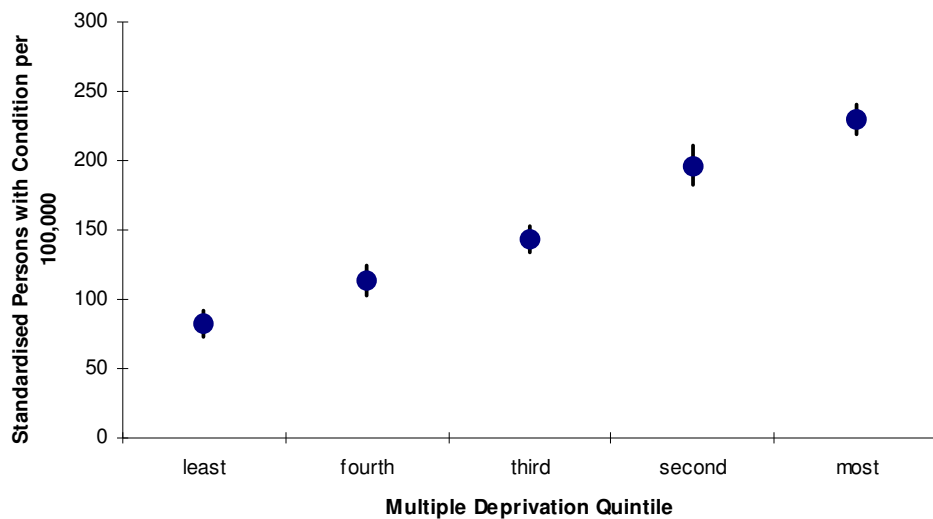
Chart 9 presents the standardised rates of lung cancer prevalence by deprivation

quintile. From this we can see a dramatic increase of lung cancer prevalence as deprivation increases, with those in the most deprived quintile (229 per 100,000) over two and a half times more likely to be diagnosed with lung cancer than those in the least deprived quintile (83 per 100,000). Thus a clear, strong link between high deprivation and prevalence of lung cancer is found across Wirral.

Chart 10: MCCR standardised rates of lung cancer prevalence by geodemographics

'People & Places' locality categorisation
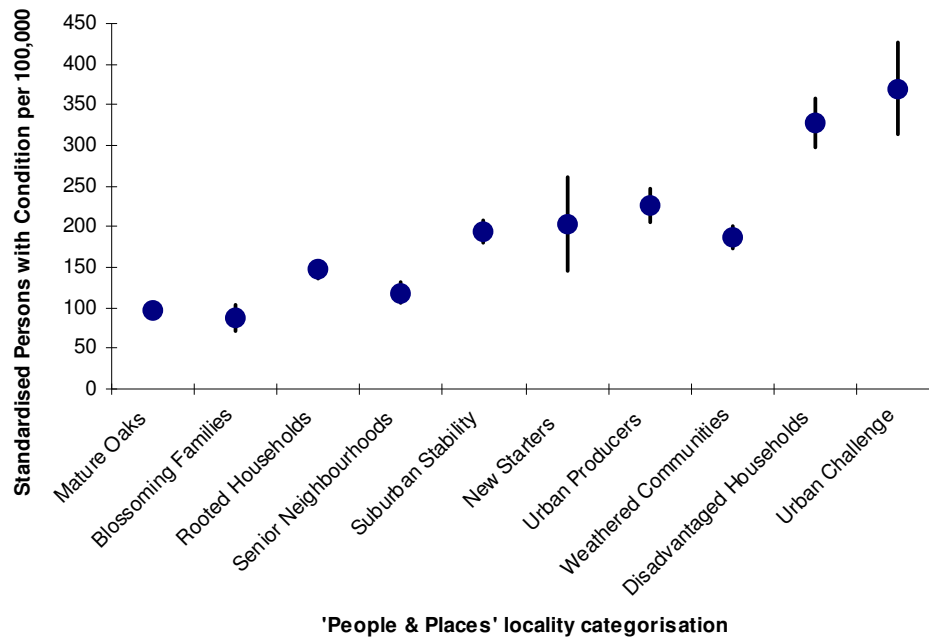
Standardised rates by geodemographic groups are shown in Chart 10. A notable increase from the least deprived to the most deprived is seen again, as in Chart 9. Urban Challenge (369 per 100,000) is the most deprived geodemographic group, with rates over three and a half times greater than the least deprived group, Mature Oaks (97 per 100,000). Chart 10 shows Blossoming Families (87 per 100,000) with lower rates of lung cancer than Mature Oaks. This is not expected, as the deprivation is likely to be greater in Blossoming Families areas and we have seen an increase in rates with higher deprivation in Chart 9. This may be due to lung cancer being rarely diagnosed in those aged less than 40 years and Blossoming Families being predominantly populated by people aged 25-34 years. As lung cancer rates have been seen to increase with higher deprivation levels (Chart 9) Senior Neighbourhoods (119 per 100,000) and Weathered Communities (187 per 100,000) would be expected to have higher rates. Although this is a similar, more pronounced trend than that seen in the whole of the North West[4].

Hospital Episode Statistics prevalence by deprivation and geodemographic
This section will continue to look at SIRs in the maps and standardised rates in the charts for both colorectal cancer and lung cancer and uses the same analyses as

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[4] Wood, J; Hennel, T; Jones, A; Hooper, J; Tocque, K; & Bellis, M.A (2006). Where Wealth Means Health: Illustrating inequality in the North West. ISBN: 1-902051-77-7
www.nwpho.org.uk/documents

the MCCR data. The HES data used in this audit has been extracted for the years 1998/9 to 2002/3. The standardised rates shown in the following charts are all markedly lower than those calculated from the MCCR data, this is expected as the MCCR will have a more complete data set on those with cancer, as opposed to HES which only records cancer in those attending hospital as an in-patient. The MCCR data includes all those who were diagnosed since 1981 and who are still alive.

<u>Map 6: HES standardised illness ratios of colorectal cancer by LSOA</u>
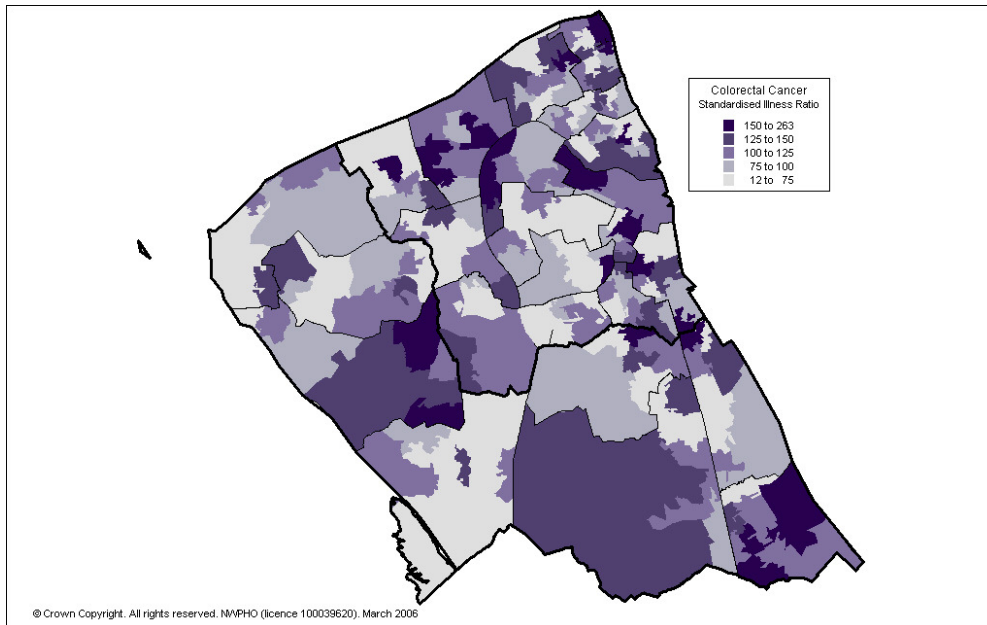
Map 6 shows the colorectal SIRs from the HES data and reveals a general spread across the areas of Wirral. There is no cluster of high or low prevalence and so no clear relationship between colorectal cancer incidence and relative level of deprivation. This can be seen with a highly deprived LSOA of Birkenhead having a low prevalence of disease. Another area that highlights the fairly even spread of prevalence across all levels of deprivation is Thurstaston, which has relatively low levels of deprivation but has a LSOA with one of the highest SIR in Wirral. The spread of colorectal cancer prevalence in Map 6 demonstrates a similarity to the ratios formulated from the MCCR data.

Chart 11: HES standardised rates of colorectal cancer prevalence by National IMD (2004) quintile
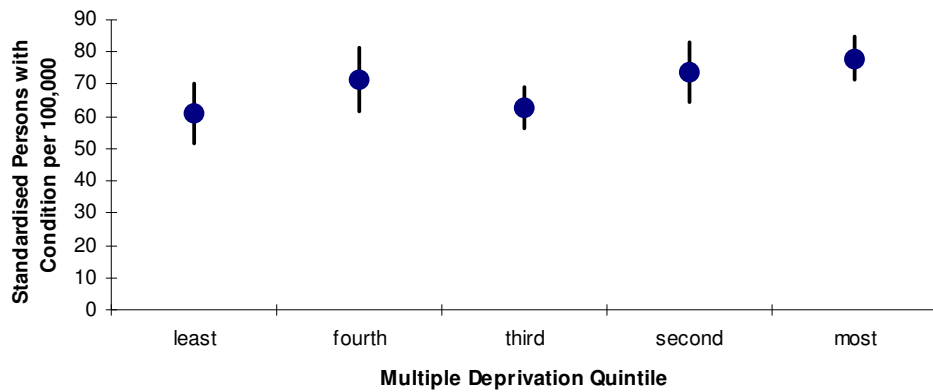
HES Rates by IMD Quintile, as seen in Chart 11, show a slight increase in prevalence from the least deprived to the most deprived. This mirrors the MCCR analysis, which highlights that there is not a strong relationship between the prevalence of colorectal cancer and deprivation.

Chart 12: HES standardised rates of colorectal cancer prevalence by geodemographics
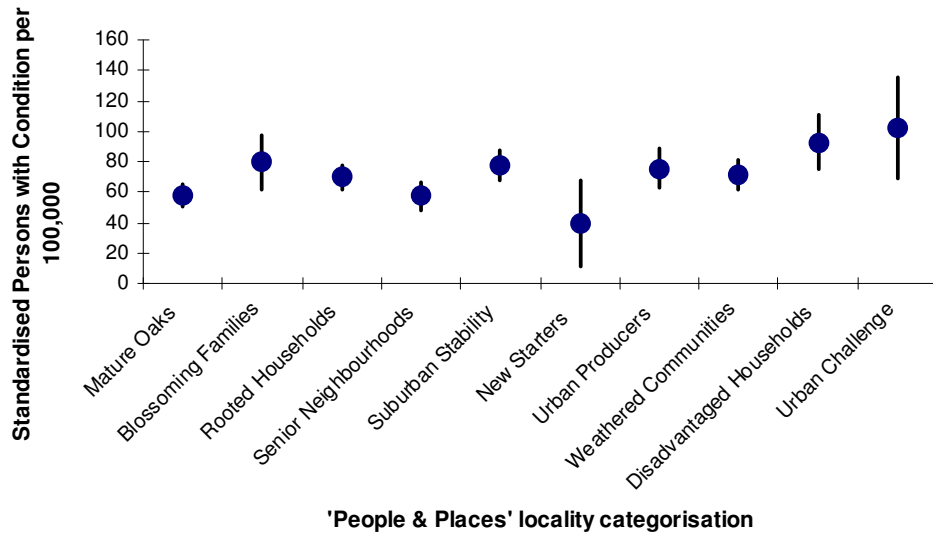
Chart 12 illustrates colorectal rates by geodemographic lifestyle group and again shows a general spread of incidence, even though the poorest socio-economic groups have the highest rates of colorectal cancer. However, New Starters have lower prevalence rates than the other lifestyle groupings, as might be expected with these areas predominantly populated with young people. This shows a greater difference than the analysis of MCCR data, which perhaps reflects a reduced need for admission to hospital that is not reflected in the true prevalence of colorectal cancer in this group.

Map 7: HES standardised illness ratios of lung cancer by LSOA
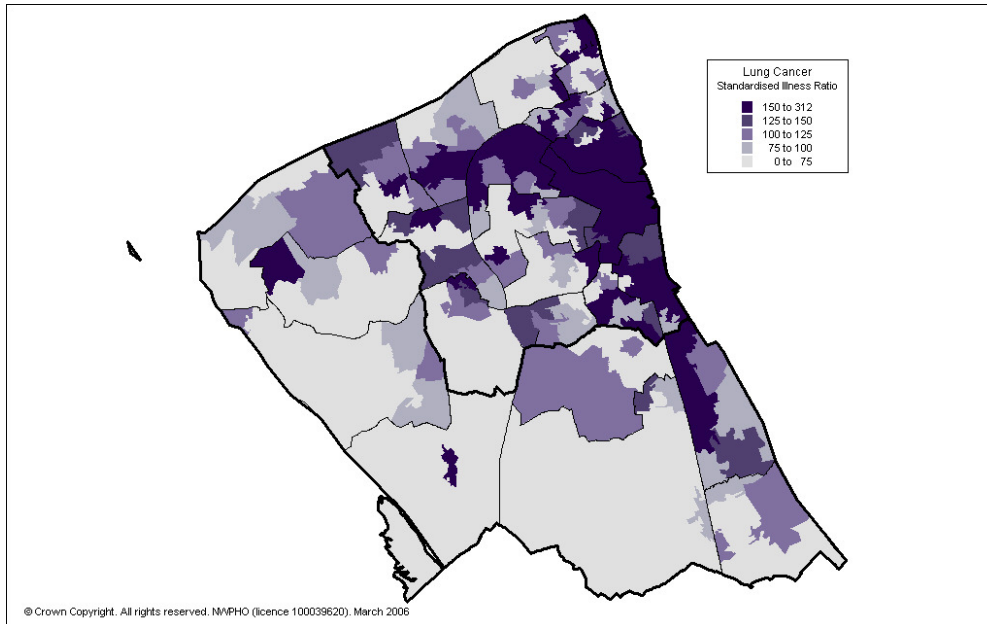
Map 7 shows lung cancer SIRs and reveals a different picture to colorectal cancer. Map 7 shows that higher than average lung cancer ratios are predominately found in densely populated areas, such as Birkenhead, Bidston and Tranmere. These areas are also the most deprived and show a strong relationship between lung cancer prevalence and level of deprivation, which is similar to the MCCR lung cancer SIR seen in Map 5.

Chart 13: HES standardised rates of lung cancer prevalence by National IMD (2004) quintile
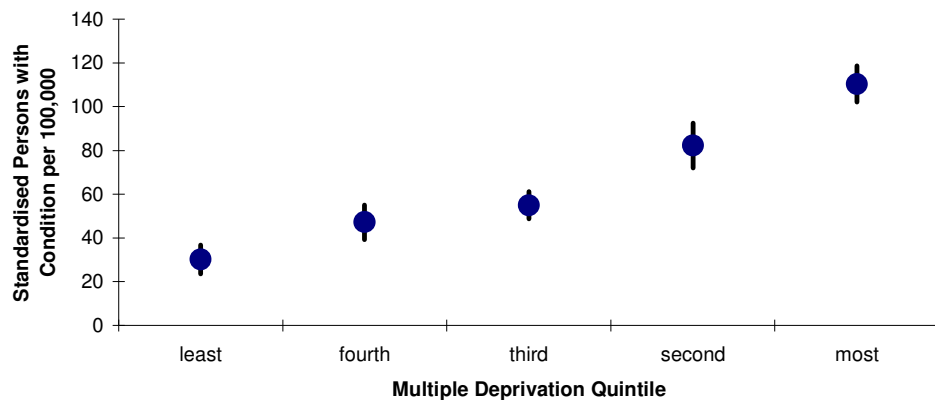
Chart 13 demonstrates an approximately quadratic relationship with the clear association between deprivation and higher prevalence rates for lung cancer. This is evident by those in the most deprived quintile being over three times as likely to be recorded with lung cancer as those in the most affluent quintile.

<u>Chart 14: HES standardised rates of lung cancer prevalence by geodemographics</u>

'People & Places' locality categorisation
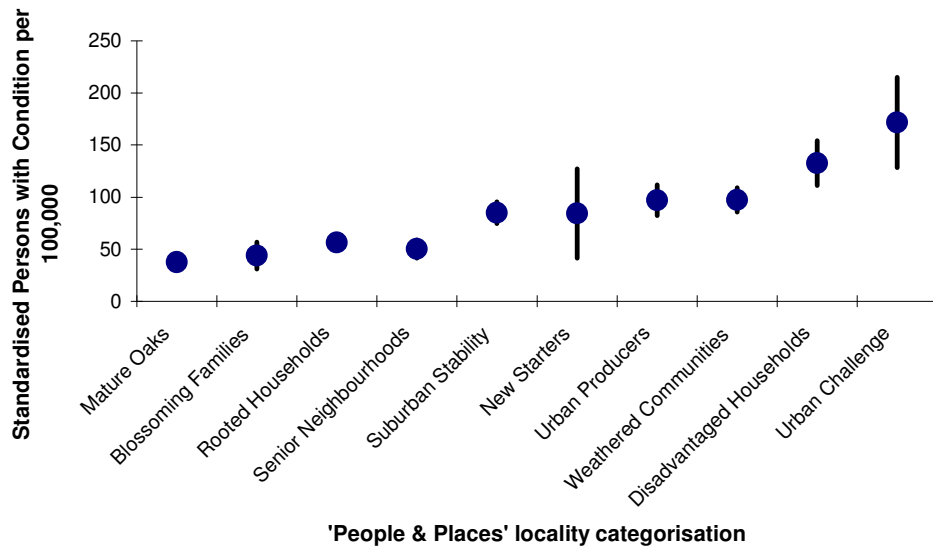
Chart 14 shows a similar relationship with deprivation, with the more affluent lifestyle groups less likely to suffer from lung cancer. Mature Oaks, such as large areas of Clatterbridge and Heswall, are over four times less likely to be diagnosed with lung cancer than the most deprived group, Urban Challenge. This shows a similar relationship to the MCCR analysis with perhaps Senior Neighbourhoods and Weathered Communities showing a slightly lower rate than might be expected given their level of deprivation.

Standardised Mortality Ratios (SMRs) and Standardised Rates

So far in the Burden of Disease section we have looked at the prevalence of colorectal and lung cancer by analysing SIRs and Standardised Rates. Now the report will focus on mortality through Standardised Mortality Ratios and Standardised Mortality Rates. The information presented in this section is derived from the same MCCR data that is used throughout the report and has been summarised by national deprivation quintile and geodemographic classifications.

Standardised Mortality Ratios (SMR), as with the SIRs seen earlier, are based on a Wirral average of 100 and are calculated in the same way, using Wirral population rates. Standardised Rates are calculated for mortality as they are for prevalence, by applying Wirral age-specific rates to the European Standard Population, and are expressed as persons dying, having been diagnosed with the relevant condition per 100,000 people.

The following section of the report will present SMRs and Standardised Rates using MCCR data from 1998 to 2003.

Map 8: MCCR standardised mortality ratios of colorectal cancer by LSOA
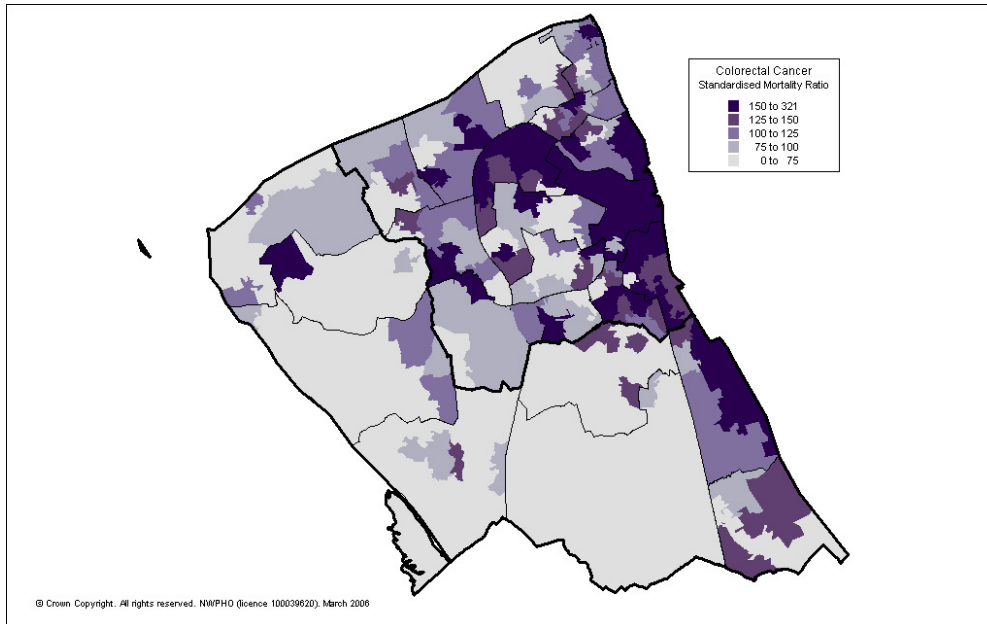
Mortality ratios for colorectal cancer are shown in Map 8 and, as with the prevalence ratios in Map 6 do not highlight a clear link to deprivation or a particular geographical area. Eastham is the ward with the highest concentration of above average mortality, with this area having LSOA from all deprivation quintiles. Tranmere, with its high deprivation levels by both National IMD 2004 and geodemographics, shows the unstructured relationship between mortality and deprivation in colorectal cancer by having LSOA that are among the lowest ratios for the whole of Wirral.

Chart 15: MCCR standardised mortality rates for colorectal cancer by National IMD (2004) quintile
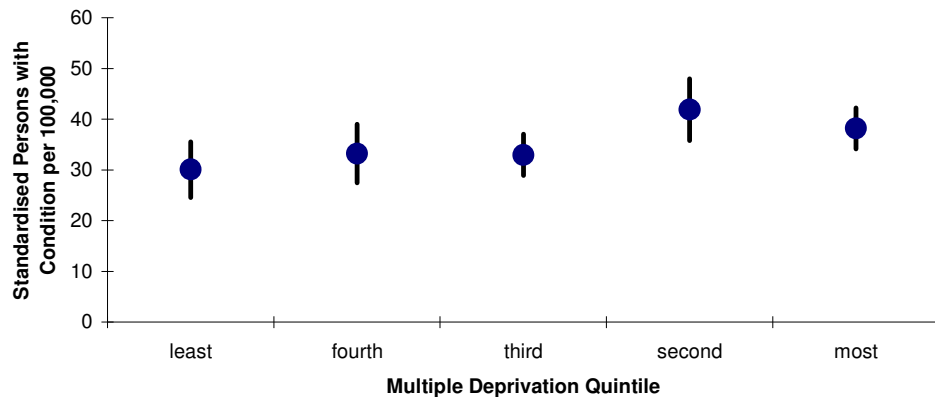
Chart 15 demonstrates a small variation between the deprivation quintiles, with only 12 deaths per 100,000 separating the lowest rate (least deprived, 30 per 100,000) and the highest rate (second most deprived, 42 per 100,000) and supports what was seen in Map 8. An interesting difference to the SIRs for colorectal cancer, show those with the highest level of deprivation having lower

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mortality rates than the second most deprived quintile. This again highlights the fact that high levels of deprivation do not have a strong link to colorectal cancer in Wirral.

Chart 16: MCCR standardised mortality rates for colorectal cancer by geodemographics

'People & Places' locality categorisation
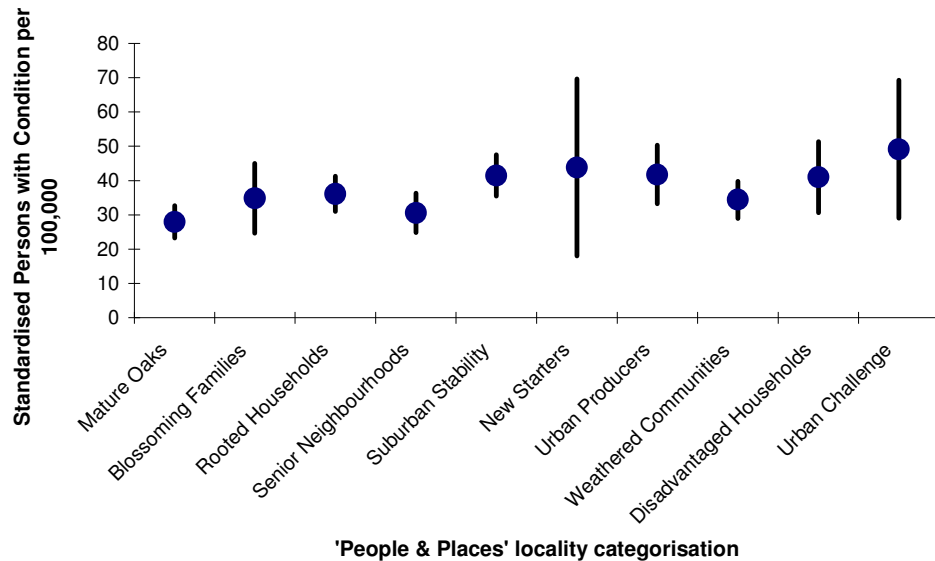
Chart 16 presents the standardised mortality rates of geodemographic lifestyle groups for colorectal cancer and show the same relationship between the groups as was seen in Chart 15. Again Mature Oaks (28 per 100,000) have lower rates than Urban Challenge (49 per 100,000), but we don't see a constant increase in rates as deprivation increases. We may also expect Weathered Communities (34 per 100,000) to have higher rates than Urban Producers (42 per 100,000), as those living in Urban Producers areas are generally aged 25–34 years, and so below the normal age of being diagnosed with colorectal cancer[5].

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[5] NHS Direct Online Health Encyclopaedia. Accessed 23/12/2005. Cancer of the colon, rectum or bowel http://www.nhsdirect.nhs.uk/en.aspx?articleId=550&sectionId=11580
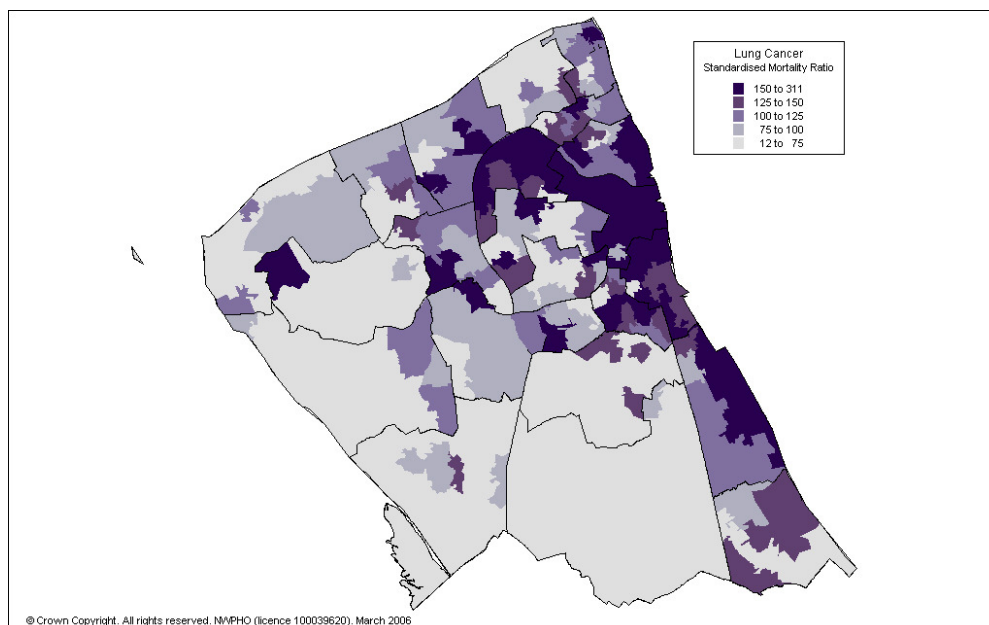
SMRs for lung cancer can be seen in Map 9 and shows a strong concentration of above average lung cancer mortality ratios in the wards of highest deprivation. Again, as was seen with lung cancer SIRs, areas of Bromborough, Tranmere, Birkenhead and Bidston have the highest SMRs. The strong relationship between increasing levels of deprivation and lung cancer mortality is clear and was expected after analysis of prevalence in Wirral. The highest SMR, of 311, was found in Birkenhead, a highly deprived area.

Chart 17: MCCR standardised mortality rates for lung cancer by National IMD (2004) quintile
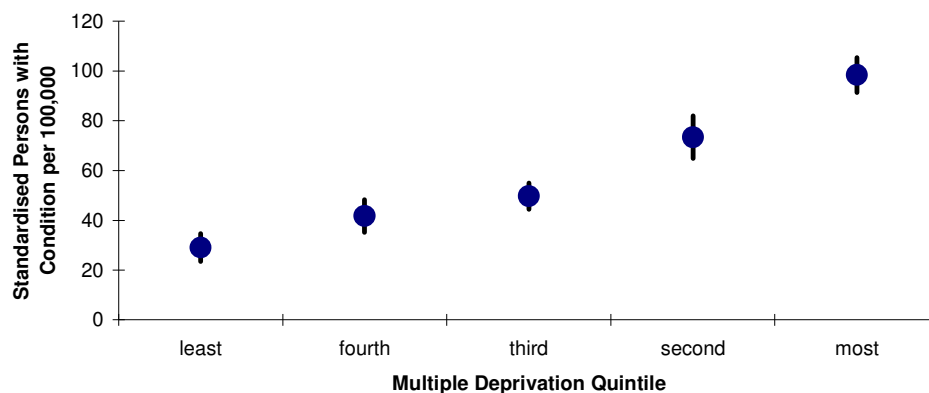
Chart 17 shows the standardised rates for lung cancer mortality, and as with the prevalence rates, an increase can be seen in mortality rates with each increase in deprivation level. Those in the least deprived quintile (29 per 100,000) are over three times less likely to die with lung cancer than those in the most deprived quintile (98 per 100,000). There is a strong linear relationship between high levels of deprivation and mortality with lung cancer in Wirral.

Chart 18: MCCR standardised mortality rates for lung cancer by geodemographics

'People & Places' locality categorisation
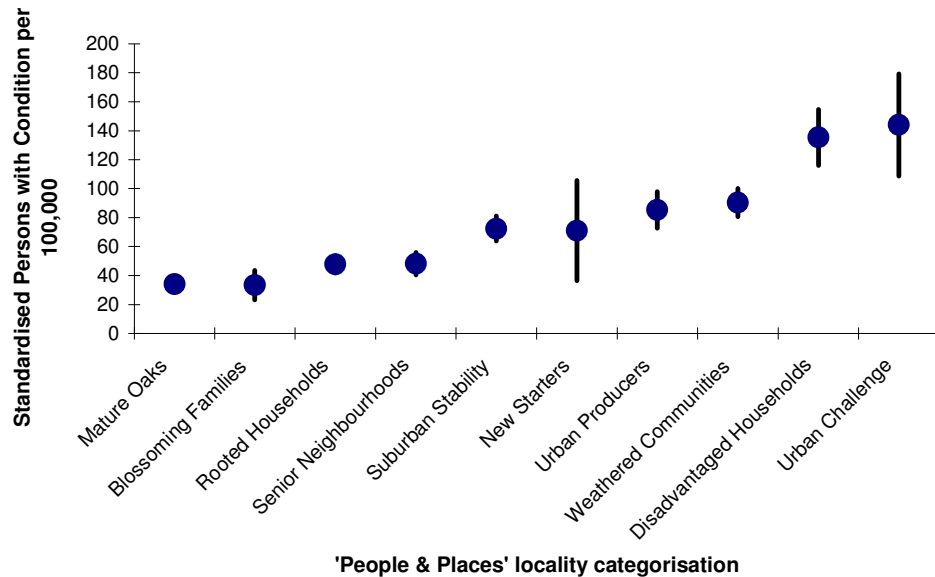
Chart 18 presents the standardised rates for lung cancer by geodemographic lifestyle group, and in general supports the findings seen in Map 9 and Chart 17. Those in Urban Challenge areas (144 per 100,000), have over 100 more deaths per 100,000 than Mature Oaks (34 per 100,000) and signals a large difference between the least and most deprived areas in Wirral. The strength of the relationship between deprivation and lung cancer could also be the reason for the sharp increase from Weathered Communities (90 per 100,000) and Disadvantaged Households (135 per 100,000), as there is a larger than average difference in deprivation. Although we have seen a strong relationship between deprivation and lung cancer, not every geodemographic group shows increased rates with higher levels of deprivation. Both Blossoming Families and New Starters show no increase from the preceding, less deprived group. This may be a result of the predominant ages found in these groups both being aged less than 40 years and the fact that lung cancer is rarely diagnosed in those less than 40 years[6].

Conclusion
After describing the prevalence and mortality ratios and rates for both colorectal and lung cancer, general conclusions can be drawn.

Colorectal cancer in Wirral is not linked to deprivation. The analysis shows no relationship between increasing deprivation and rates of colorectal cancer, for both prevalence and mortality. A point made with the third most deprived group having shown lower rates than the fourth most deprived quintile for each analysis. Rates were also classified by geodemographic lifestyle group, with Blossoming Families and Senior Neighbourhoods producing interesting results. Blossoming Families show quite a large increase compared to Mature Oaks in all three sets of analysis. The rates are higher than expected given the high proportion of people aged 25-34

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[6] NHS Direct Online Health Encyclopaedia. Accessed 23/12/2005. Cancer of the lung.
http://www.nhsdirect.nhs.uk/en.aspx?articleID=79

years who populate these areas, as colorectal cancer is rarely diagnosed in those less than 40 years of age. We might also have expected higher rates from Senior Neighbourhoods as the group contains a high proportion of pensioners and older people but they have lower than expected rates.

Whereas colorectal cancer shows no strong link to deprivation, lung cancer in Wirral shows a strong linear relationship in all three analyses. Although there is a strong link between lung cancer and deprivation, geodemographic groups did not present a straight linear relationship across deprivation. Suburban Stability areas had higher than expected rates, especially compared to Senior Neighbourhoods and New Starters, which have similar levels of deprivation. Weathered Communities are the most notable grouping in terms of deviating from the expected trend. For each set of rates calculated, Weathered Communities show a levelling off or drop in rates when compared to Urban Producers. This is unexpected as the group contains a high proportion of pensioners and a fairly high level of deprivation, which are both factors linked to lung cancer.

Risk Factors and Evidence Base for Interventions

Data estimate that the modifiable risk factors for cancer are responsible for the following percentages of the global burden of such disease[7]:

Table 7: Modifiable risk factors for cancers

Tobacco	30%
Diet and Obesity	30%
Alcohol	3%
Inactivity	3%
Occupational Factors	5%

Although cancer screening (secondary prevention) has led to improvements in cancer mortality, primary prevention has been shown to be seven times more effective. It is apparent that smoking cessation, decreased tobacco exposure, improved diet and decreased obesity are the key interventions that public health should be aiming to promote to maximise reductions in cancer mortality, specifically lung and colorectal cancers.

The following information summarises the available evidence on the most effective interventions to tackle the key risk factors for lung and colorectal cancers.

Smoking

A plethora of studies have made a strong link between the development of lung cancer and specific risk factors. The amount of risk attributable from each risk factor is not equal and by far the most influential is tobacco smoking. This is followed by exposure to second-hand smoke and then to a lesser degree, by exposure to asbestos and radon. These latter exposures affect small numbers of the population and therefore, have a lower degree of influence over population health than smoking and second-hand smoke. They have not been examined in this equity audit.

People have a choice about whether to smoke or not but there are a great many contributory factors that lead to people making that choice. The onset of smoking is greatly influenced by factors including educational attainment, social aspirations, the numbers of smokers in the family, and social and ethnic group. In addition, a person is more likely to be exposed to second-hand smoke if they are working in low paid employment or are from a low income family. Hence, although choice might exist, the environment people live in severely influences whether the choice made will be a healthy or less healthy one.

Prevalence of smoking in Wirral
To reduce the most influential risk factor for lung cancer, we need to understand who is most at risk from smoking. Results from the General Household Survey

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[7] Adami, H.O., Day, N.E., Trichopoulos, D., and Willett, W.C. (2001). Primary and secondary prevention in the reduction of cancer morbidity and mortality. European Journal of Cancer, 37, S118-S127.

2002 indicate that 26% of adults aged 16 years and over, smoke cigarettes[8]. This was made up of 27% men and 25% women. The Health Development Agency recently estimated the current prevalence of smoking at PCT level[9]. This demonstrates extensive differences in prevalence between PCTs across the country but also between the two Wirral PCTs. Bebington & West Wirral PCT is estimated to have a smoking prevalence of 21% whilst Birkenhead & Wallasey PCT is estimated to have 31% of its population smoking. The smoking prevalence for Cheshire and Merseyside is estimated to be 29%.

The General Household Survey found that smoking prevalence was highest amongst young adults aged 20-24 years, with rates reported (for 2001) as 39% for men and 35% for women. The Health Survey for England also found that younger adults have the highest smoking rates with 16–34 year olds having a prevalence of 36% (including 38% amongst 25-34 year old men)[10].

Whilst the overall prevalence of smoking amongst young people aged 11–15 years declined from 10% in 2002 to 9% in 2003, there are sharp increases in prevalence with increasing age[11]. Amongst 11 year olds, 1% smoke regularly (at least one cigarette each week) compared to 22% of 15 year olds. Overall, girls are more likely to smoke than boys at 11% and 7% respectively. The overall higher prevalence of smoking amongst girls compared to boys was found across all age groups except at age 11 years. For example, smoking was reported by 16% of 14 year old and 26% of 15 year old girls, compared with 9% of 14 year old and 18% of 15 year old boys.

The NHS Cancer Plan (2000) set the first ever smoking inequalities target. Its aim was to reduce smoking rates among manual groups from 32% in 1998 to 26% by 2010 in order to narrow the health inequalities gap[12]. The definition of 'manual group' and how smoking rates or prevention services should be identified and targeted locally remains sketchy and so no local statistics exist in relation to this target.

When smoking prevalence is analysed by social group, it shows a clear correlation between higher social group and lower smoking prevalence. In social class five, prevalence is at its highest at 45% in men and 33% amongst women. In social class one it is lower at around 15% in men and 14% in women. Some studies have looked specifically at the most vulnerable groups in society and highlighted immense inequalities such as smoking prevalence rising to 90% amongst homeless people sleeping rough[13].

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[8] Office for National Statistics. (1998). General Household Survey 1998.
http://www.statistics.gov.uk/ssd/surveys/general_household_survey.asp
[9] Health Development Agency. (2004). Smoking attributable mortality in England. HAD: London.
www.hda.nhs.uk
[10] NCRS/UCL. (2004). Health Survey for England 2002. (Computer file). National Centre for Social Research: University College London.
[11] National Centre for Social Research / National Foundation for Educational Research. (2002). Drug use, smoking and drinking amongst young people in England in 2003. London: Department of Health.
[12] Department of Health. (2000). The NHS Cancer Plan. Department of Health: London.
[13] Jarvis, M. (2001). The challenge for reducing inequalities: Analysis of General Household Survey 1998. Presentation to the Department of Health Seminar.

Self reported cigarette smoking prevalence among men and women from black and minority ethnic (BME) groups is shown in table 8. This highlights that several BME groups have smoking prevalence higher than the overall population national average.

Table 8: Self reported smoking prevalence among minority ethnic groups

Minority ethnic group	Prevalence (men)	Prevalence (women)
Bangladeshi	44%	1%
Irish	39%	33%
Black Caribbean	35%	25%
Pakistani	26%	5%
Indian	23%	6%
Chinese	17%	9%

Although the proportion of pregnant women who have never smoked has remained fairly constant during the last decade, the proportion who continue to smoke throughout pregnancy has risen (27% in 1992 compared to 30% in 1999)[14]. Smoking in pregnancy is also influenced by social group with prevalence rising from 15% to 43% from the respective highest to lowest social group. In the age group 16-24 years, smoking prevalence in the lowest social group remains especially high at 52%. Smoking prevalence by trimester of pregnancy clearly shows that the proportion of women who quit during pregnancy is quite small. The same source also shows that over nine annual surveys, 32% of women were currently smoking in their first trimester, 27% in the second and 25% in their third trimester.

The Department of Health have set challenging targets for each PCT to achieve to include a reduction in smoking prevalence and the number of four-week quitters (smoke free for at least four weeks). Evidence clearly shows that stop smoking interventions are highly cost effective when compared to the treatment of smoking related disease. The success of smokers wanting to quit is enhanced by the provision of counselling to help them prepare and plan for their quit attempt. In addition, the provision of aids such as Nicotine Replacement Therapy and Zyban increase smokers' chance of quitting by up to four times.

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[14] Health Education Authority. (1999). Smoking and pregnancy, a survey of knowledge, attitudes and behaviour. http://www.hda-online.org.uk/downloads/pdfs/smoking_and_pregnancy.pdf

Obesity[15 16 17 18 19]

A 10% weight loss can have numerous benefits to both health and health risk including a 40-50% decrease in obesity-related cancer deaths. Successful weight management relies on maintaining a balance between energy consumed (food intake) and energy expended (exercise). There are three main methods of instigating weight loss:

Lifestyle Modification

Multi-factoral interventions including diet, exercise, behaviour change or medication are more effective than diet alone at instigating long-term weight loss. Dietary intervention is the most common and effective lifestyle change method for instigating short-term weight loss. This effectiveness appears to be maximised by using a combination of treatments. Over the medium-term, a combination of techniques again appears to be most effective, although the evidence is less convincing than for the short-term. However, long-term effectiveness of lifestyle modification is currently either inconclusive or not available.

Anti-Obesity Medication

Anti-obesity medication appears to be effective at instigating weight loss in the short- and medium-term. Evidence suggests that the effectiveness of orlistat decreases between one and two years, whereas this is not the case for sibutramine. However, orlistat appears to cause less adverse effects even over periods up to two years. There is no evidence currently available regarding the long-term use of anti-obesity medication to be able to understand how this pattern continues beyond two years. It is important to consider that patients prescribed anti-obesity medication are nearly always put onto some form of dietary intervention at the same time, so they are getting two types of treatment, whereas lifestyle modification can be utilised by anyone. The selection criteria of studies that examine drugs are often restrictive. This means that extrapolation of findings to the general population is not always possible.

Bariatric Surgery

It appears that surgical interventions are effective at instigating medium- and long-term weight loss amongst patients with a body mass index of >40kg/m^2. However, the characteristics of patients undergoing surgery means they are more likely to

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[15]Avenell, A., Brown, T.J., McGee, M.A., Campbell, M.K., Grant, A.M., Broom, J., Jung, R.T., and Smith, W.C.S. (2004). What interventions should we add to weight reducing diets in adults with obesity? A systematic review of randomised controlled trials of adding drug therapy, exercise, behaviour therapy or combinations of these interventions. Journal of Human Nutrition and Dietetics, 17, 4, 293-316.

[16] Mulvihill, C. and Quigley, R. (2003). The management of obesity and overweight: An analysis of reviews of diet, physical activity and behavioural approaches. Health Development Agency.

[17] Glenny, A.M., O'Meara, S., Melville, A., Sheldon, T.A., and Wilson, C. (1997). The treatment and prevention of obesity: a systematic review of the literature. International Journal of Obesity, 21, 9, 715-737.

[18] National Institute for Clinical Excellence. (2002). Guidance on the use of surgery to aid weight reduction for people with morbid obesity. National Institute for Clinical Excellence.

[19] Baxter, J. (2000). Obesity surgery – another unmet need. British Medical Journal, 321, 523-524.

achieve higher percentage and actual weight losses because they are morbidly obese and highly motivated. There is a lack of evidence regarding short-term effectiveness due to a lack of research, but otherwise evidence suggests such treatment should be made available to those fulfilling the National Institute of Clinical Excellence (NICE) criteria. Indeed, many national and international authors and professional bodies now advocate the use of surgical interventions. However nationally in Britain there are very few qualified surgeons to undertake this work and PCTs are often reluctant to pay for patients to receive it. It is important to consider that all patients receiving surgical interventions have to eat restricted diets due to the nature of the operation, so they are having dietary restriction in addition to surgery.

Nutrition [20]

Poor diet is associated with an increased risk of cancer. This refers to a diet that is low in fibre, fruit and vegetables and high in sugar, refined carbohydrates, dairy and red meat products.

A Health Development Agency review of the most effective interventions to promote healthy eating amongst the general population identified the following key messages:
*   Interventions to promote healthy eating should address only one related risk factor, e.g. low fat.
*   In supermarket and catering settings, healthy eating information should be introduced at the point of choice and supported by more detailed printed information either within the outlet or in local media.
*   In supermarket and catering settings, simple shelf or menu signs should be used to display healthy eating information, kept in place over a long period of time, and be regularly updated.
*   In supermarket and catering settings, attention should be paid to co-ordinating messages with food producers, retail outlets, and the media in order to promote consistency of information.
*   Dietary change may be effected by introducing modifications in food composition in a catering setting.

Conclusion

It is clear that there is evidence regarding a number of effective ways to decrease smoking, improve diet and decrease obesity levels. This evidence needs to be incorporated into strategic plans, such as the Tobacco Control, Food and Health, and Obesity strategies and inform future delivery of services and interventions.

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[20] Health Development Agency. (1997). Health promotion interventions to promote healthy eating in the general population – a review. Available at: www.hda-online.org.uk/html/research/effectivenessreviews/ereview6.html Accessed 17th December 2004.

Prevention

Colorectal Cancer

The main risk factors for colorectal cancer are food and nutrition, maintenance of a healthy weight, including physical activity, and smoking.

Prevention and Management of Overweight and Obesity

Wirral has had an obesity strategy since April 2003. This document reflects a high degree of partnership working and planning over many years within the borough. The strategic priority of the strategy is to reduce the existing rise in overweight and obesity amongst adults and children and specific targets have been set. The strategy has recently been reviewed and new targets agreed at a stakeholder event held in March 2006. These targets form the basis of a new strategy that will run for the next three years.

An effective obesity strategy needs to focus not only on treating people that are already overweight, but also helping people to maintain a healthy weight and prevent weight gain. To support this, Wirral also has a food and nutrition strategy and a physical activity strategy. A Health Promotion Specialist team is employed within the Public Health Department of the PCTs to co-ordinate each of these strategies. A number of interventions have been established as a result of the strategy action plans to include a walking for health scheme, Active Tots and Kids Excel activity programme.

Lifestyle & Weight Management Service

Wirral has a comprehensive service designed to help obese people with co-morbidities to reduce weight and other lifestyle risk factors. The Lifestyle and Weight Management Service has been operational since November 2003. It is a specialist obesity service for primary care funded by both Birkenhead & Wallasey and Bebington & West Wirral PCTs. Referral criteria apply and participants access a comprehensive 12-week weight management programme. This includes a free pass to local leisure centres for 12 weeks, provided by Wirral Borough Council, plus a course that includes dietary modification, advice on home-based physical activity and ongoing support and motivation. Weight management courses are available in a variety of locations across the borough with daytime and evening sessions available. Once an individual has completed the initial three-month intervention they are then followed up by their advisor on a monthly basis for an additional nine months. Evidence suggests that for this client group, the longer the support, the more favourable the outcomes.

The aim of the service is to provide free weight management support that is motivational and non-judgmental. Clients are encouraged to look at setting their own goals but a general target weight loss for the initial three months is 5-10% of their body weight. Research has shown that even this modest weight loss can bring about significant health gains including reducing blood pressure, incidence of type 2 diabetes and the risk of coronary heart disease.

All clients accessing the service are referred by a health professional and are seen

individually to develop a management plan to suit their needs. The majority of clients choose to attend one of the weight management courses and in some instances, e.g. the clients with BMI>45, are seen by the in-house dietician for specialist support.

Additional resources within the scheme include guided supermarket tours, cookery demonstrations, free recipes and plenty of supportive literature. In addition, once the client has completed their course a bi-monthly newsletter is sent out by the service to help keep clients motivated and on track.

The patient information management database for the service was commissioned from an external agency (Road to Health). Unfortunately, the database has never functioned and data are not available other than what can be generated by hand. New software is currently being built by the PCT and the data will be transferred during April. This will enable monitoring reports and detailed information to be generated by which the service can be evaluated and developed. Data reported here have been generated from paper records.

During the first complete year (April 2004 – March 2005) 1,377 people were referred from primary care into the service. Of these, 23% did not make contact with the service and so did not enter the programme. 43% completed the programme (the remaining proportion either dropped out during the programme or were inappropriate referrals). Table 9 shows the age and sex proportions of clients entering the service.

Table 9: Numbers of people completing a Lifestyle & Weight Management Service course by gender and age group

Age Group (Years)	Male	Female
16-18	1	0
19-34	8	18
35-44	34	79
45-59	53	198
>60	83	114
Total	189	409

More women than men completed the weight management programme. It is not known what the proportions of each sex were that were originally referred into the service. Therefore, it is not known if it is referrals that do not contact the service or drop outs that are disproportionate by sex. Further analyses of the data are required before recommendations can be made. However, as referrals are exclusively from primary care to the service, middle aged men are likely to be under represented. Therefore, additional and specifically targeted interventions suitable for men may need to implemented in addition to the existing service.

None of the clients who completed the programme were from backgrounds other than white English. It is not known if any of the clients referred from primary care were from other black and minority ethnic groups. Therefore, it is not possible to make recommendations in relation to ethnicity and access to the service. However,

indications are that this group is under represented.

Table 10: Numbers of people attending Lifestyle & Weight Management Service by postcode

Postcode	
CH41	**49**
CH42	**58**
CH43	73
CH44	**62**
CH45	70
CH46	**63**
CH47	5
CH48	15
CH49	70
CH60	4
CH61	27
CH62	33
CH63	51
CH64	9

The service is predominantly attended by people from postcodes that cover the more disadvantaged areas of Wirral. The postcode areas highlighted on Table 10 are designated Neighbourhood Renewal areas and are the most disadvantaged in Wirral. This demonstrates that the service is successfully targeting those in disadvantaged groups, who are more likely to be obese, especially the women.

During the first six months of operation, the Lifestyle and Weight Management Service achieved an average percentage weight loss of 4.9% for all clients completing the programme. After 12 months this increased to 5.2%. This shows that the service is meeting its primary objective which was to help obese clients achieve a minimum of 5% percentage weight reduction.

Intermediate Lifestyle and Weight Management Service
The Lifestyle and Weight Management Service has followed the same development protocols as the Wirral Stop Smoking Service. The first stage was to set up a central specialist service and then to develop satellite intermediate services. The first stage of this has been to develop a training programme for practice nurses to enable them to deliver weight management programmes in primary care. To date, three courses have been provided and two further courses are fully booked in 2006. Intermediate advisors in primary care are now providing weight management support on either a 1:1 or group level in GP practices.

Weight Wise- Exercise
A shortage of local, supervised physical activity opportunities in Wirral has led to a project to set up a special team of activity leaders. This team will develop and provide a programme of activities throughout Wirral specifically for people that are overweight or obese. These sessions will be based in leisure and community centres throughout Wirral. The team are currently being recruited and it is hoped

that sessions will start in the summer of 2006.

Start Right
When the Lifestyle and Weight Management Service was first commissioned by the PCTs, a commitment was made to ensure that protocols for supporting overweight children would be developed once the main specialist service was up and running. Start Right is a family based pilot programme for obese children. Small numbers have entered the pilot to date but initial feedback is very positive. The pilot runs until August 2006 and evidence of successful practice will be incorporated by the Lifestyle and Weight Management service so they can open referrals to children.

The Confidential Advice Service (CAS) for young people has piloted a weight management course for teenagers. Positive feedback has been received and a further course is being planned which will be fully evaluated. It is hoped that this may provide protocols that can be more widely used in the future to support this age group.

Food and Health Strategy
Wirral Food and Health Strategy Group is a partnership between statutory, voluntary and community organisations. The group has been responsible for developing school food policies (including school meals policy), funding community projects and promoting healthy eating messages. These messages focus on key nutrition tips of reducing fats, salt and sugars and increasing fibre and fruit and vegetables.

Wirral was one of the first districts to deliver a 5-a-day programme. In fact, the Wirral programme ran for two years prior to the launch of the national 5-a-day scheme which provided funding for a further two years. Evaluation showed that this programme was well received locally and did positively impact on the number of portions of fruit and vegetables consumed by key groups. This success was also demonstrated in a lifestyle survey across Merseyside, in which Wirral PCTs had the highest levels of fruit and vegetable consumption compared to other areas.

The Wirral Healthy Schools Scheme provides a focus on food and nutrition as well as reducing other cancer risk factors such as inactivity, smoking and substance misuse.

Availability of Information on Healthy Balanced Diets
Health Links is the Specialist Health Promotion Service for Wirral. They manage an information and resource library that procures, stores and distributes public information, campaign materials, learning resources and professional development packs to all health promoters in Wirral. The library is a central source of information on food and nutrition as well as other aspects of lifestyle, health and cancers.

Culturally appropriate balance of good health information can be obtained from www.meatandhealth.co.uk although this contains different foods, relevant to

cultural and BME groups, it is still printed in English. Wirral Multicultural Centre has some of these on display but they are not readily available from other community or health venues.

5 A DAY information is available from www.5aday.nhs.uk in Arabic, Bengali, Chinese, English, Farsi, French, Gujarati, Hindi, Kurdish, Polish, Portuguese, Punjabi, Somali, and Urdu. Additionally, this information is only available to download. Orders of hard copies of leaflets are not available.

Non-written information is not currently available, e.g. tapes, CDs, videos, DVDs. A recent survey of Wirral PCTs, Local Authority and schools was undertaken to find out what healthy eating information was held by and made available to staff and public by this range of organisations. The survey showed that:

PCTs
- Out of nine returns, six departments had healthy eating information available and three had none. Those with information distributed it equally through posters, leaflets in reception, leaflets given to clients, or spoken advice.
- The information available covered a wide range of areas, although little information was given around healthy eating in the family, dental health and weight management.
- Most departments used the Health Links Resource Library for their information or national organisations such as British Heart Foundation or Diabetes UK.
- Four of the nine departments said that the food served to their staff / clients did not correspond with the messages they were giving out, as there were often poor or unhealthy choices, poor labelling or high-fat options.
- All three of those departments without healthy eating info said they were interested in beginning the process to start making the information available.

Local Authority
- Out of five returns only one had healthy eating information available.
- This information was available through leaflets in the reception area and included eating a balanced diet, 5 A DAY and dental health.
- The four departments that did not have healthy eating info available said it was due to not knowing how to access info, or no interest being shown. However, three of these departments are now interested in making healthy eating information available.

Schools
- From the 14 schools that completed the questionnaire, 11 had healthy eating information available and three did not.
- This information was given in a number of ways including posters, leaflets in reception, leaflets handed out, spoken advice, cookery classes, annual health weeks, and during curriculum time. Other media such as Metro (Wirral Borough Council's catering department) promotional taster sessions, information in assembly and leaflets for parents were also used.
- The information available in schools included eating a balanced diet, 5 A

DAY, water, healthy eating in the family, dental health, weight management and specific diets.
- Schools got their information from a number of places including Health Links Resource Library, School Fruit & Vegetable Scheme, 5 A DAY website, Heart of Mersey and Food Standards Agency.
- Five schools thought the food that was being served corresponded with the healthy eating information given out. However, 6 schools thought it did not correspond to this information.
- Some schools that already had healthy eating information showed an interest in obtaining further information, and all of the schools who did not have healthy eating information expressed an interest obtaining this and making it available within the school.

All questionnaires included a comprehensive list of healthy resources and where these can be accessed. Where further work needs to be done, these departments will be contacted individually to begin whatever process is required.

Lung Cancer
Stop Smoking Services
Smoking is the primary risk factor for lung cancer and there are a number of initiatives being co-ordinated in Wirral aimed at reducing prevalence. These initiatives include a comprehensive and extensive stop smoking service. Stop smoking is co-ordinated by SUPPORT, which is a specialist stop smoking service. The service is hosted and managed through Birkenhead & Wallasey PCT but is commissioned to provide a Wirral wide service on behalf of both PCTs.

SUPPORT primarily consists of a Specialist Service and a network of Intermediate Advisors. The Specialist Service meets hard to reach smokers and those that have tried and failed to quit. They co-ordinate access for all target groups such as pregnant women and young people. SUPPORT also co-ordinate all data collection and reporting, information and campaigning and training of Intermediate Advisors. There are over 150 Intermediate Advisors trained by SUPPORT who deliver smoking cessation in venues such as GP practices, schools and pharmacies.

The Department of Health set challenging targets for each PCT to achieve each year. The monitoring points for this target are the number of quit dates set and the number that remain smoke free for 4 weeks. The success rate is expressed as the percentage of people setting a quit date that achieve 4 weeks smoke free. Each year since the targets were set, Bebington & West Wirral PCT has struggled to achieve the numbers set and failed to meet the target. Birkenhead & Wallasey PCT has achieved the target each year. However, for the first time, in 2005/06, this PCT is also expecting to fail to meet the target. However, this should not detract from the enormous commitment that both organisations make to helping large numbers of people to stop smoking and reduce their risk from lung and other cancers.

An equity audit of Wirral stop smoking services was completed in March 2005. This work was undertaken to assess the degree to which the planned interventions were targeting efforts where smoking prevalence was highest and to identify

inequity in access to stop smoking support. The audit utilised data from the complete year April 2003 to March 2004.

In 2003/04, Wirral SUPPORT helped 5,016 people (1.8% of the adult population) to set a quit date and of these 2,205 smokers (0.8% of the adult population) were classed as 4 week quitters (smoke free for 4 weeks from quit date).

Table 11 shows the proportion of quit dates set, 4 week quitters and estimated smoking prevalence for each of the two Wirral PCTs. The table also shows the number and proportion of all smokers in Wirral that fall into each PCT. This clearly shows that access to SUPPORT is not equal to need across the two PCTs as Bebington and West Wirral have 25% of all Wirral smokers but only 17.7% of quit dates set and 20.5% of 4 week quitters are from this area.

Table 11: Service uptake compared to smoking prevalence and proportion of smokers in each Wirral PCT 2003/04

	% of total Wirral quit dates set (quit dates set for PCT)	% of total 4 week quits (4 week quits for PCT)	Estimated smoking prevalence	% and no. of Wirral smokers in each PCT
BWWPCT	17.7% (882)	20.5% (453)	**21%**	**25%** (18,881)
BKWPCT	82.3% (4,134)	79.4% (1,752)	**31%**	**75%** (56,284)
Total	5, 016	2,205		75,165

Stop Smoking and Age Groups
Smoking prevalence across all age groups is highest amongst young people. Prevalence amongst 16-34 year olds is estimated to be 36% (and slightly higher in 20-24 year olds*).* Table 12 shows that quit dates set in Wirral amongst those aged under 35 as a percentage of the total is only 29.8%. This falls to 24.2% for 4 week quitters. As this age group have some of the highest smoking prevalence rates of all age groups, this shows that SUPPORT need to target this younger age group more effectively to increase the proportion of quit dates set as a percentage of the whole service outputs. The fact that the proportions in this age group fall still further when looking at 4 week quitters is not surprising as evidence based practice in relation to stop smoking work with young people is very limited. However, Wirral should consider ways to more effectively target those aged less than 35 years to increase the proportion of activity from this age group.

Table 12: Quit dates set and 4 week quitters by age 2003/04

	<18 years	18-34	35-44	45-59	60+	Total
N° Quit dates set (% of all)	116 (2.3%)	1,381 (27.5)	1,188 (23.6)	1,430 (28.5)	901 (17.9)	5,016
N° Quit at 4 weeks (% of all)	36 (1.6)	499 (22.6)	518 (23.4%)	626 (28.3)	626 (28.3)	2,205
% Success	31	36	44	44	58	44

SUPPORT was established to provide smoking cessation support to adults aged 16 and over. However, the Wirral service has provided support for children under this age and has a specialist member of staff dedicated to developing this work. Because this hard to engage age group are not specifically identified within the targets reported to the Department of Health, a lower amount of emphasis has been placed on this work. In addition, SUPPORT reports required by the PCT and Department of Health only identify activity less than 18 years rather than this being separated out for under 16 and 16/17 years. Therefore, it is difficult to understand what ages have been targeted.

Surveys show that smoking prevalence amongst young people increases with age with 26% of 15 year old girls and 18% of 15 year old boys smoking. Of all stop smoking activity reported by SUPPORT, only 3.3% of the annual quit dates set were amongst boys and 1.5% amongst girls in the under 18 age group. For 4 week quits, this reduces to 2.3% of boys aged less than 18 years and 1.1% of girls in this age group. Clearly, this activity needs to be increased with an emphasis on expanding services appropriate to girls. It would also be beneficial to expand data capture to include more age categories below 18 years.

As success rates for stop smoking increase with age, for every intervention, fewer quit dates are set and even fewer 4 week quitters achieved in the under 18s compared to all other ages. As the targets set by the Department of Health for the numbers of 4-week quitters Wirral PCTs must achieve are so demanding, it is not surprising that the under 18 age group has not had more time and resource directed at them. SUPPORT have the expertise and enthusiasm to direct efforts to this group but admit that they are forced to limit this activity because it may prejudice their ability to meet the overall quit targets. Therefore, SUPPORT should ensure that they make use of all available evidence based practice for working with this age group to maximise success rates and increase access.

Tables 13 and 14 show SUPPORT activity by age, gender and PCT. The data show that Birkenhead & Wallasey PCT is more effective in targeting smokers aged 18 and under than Bebington & West Wirral PCT (75 and 41 quit dates set respectively). However, out of these overall figures, Bebington & West Wirral PCT has supported 37 males and only 4 females to set quit dates and 13 males compared to only 1 female has quit at 4 weeks. Females have a higher smoking prevalence than males so the proportions accessing SUPPORT are not representative of these figures.

Table 13: Bebington & West Wirral PCT SUPPORT activity by age and gender

Bebington & West Wirral						
	<18 (%)	18-34 (%)	35-44 (%)	45-59 (%)	60+ (%)	Total
Males						
Quit dates set (% of total quit dates set in age group)	37 (8.8)	76 (18)	102 (24)	106 (25.3)	99 (23)	420
4 week quitters (% of total quits in age group)	13 (6.2)	28 (13.5)	51 (24.6)	51 (24.6)	64 (30.9)	207
% success	35	37	50	48	65	49
Females						
Quit dates set (% of total quit dates set in age group)	4 (0.2)	123 (26.2)	93 (20)	138 (29.8)	104 (22.5)	462
4 week quitters (% of total quits in age group)	1 (0.4)	55 (22.3)	48 (19)	72 (29)	70 (28)	246
% success	25	45	52	52	67	53

Table 14: Birkenhead & Wallasey PCT SUPPORT activity by age and gender

Birkenhead & Wallasey						
	<18 (%)	18-34 (%)	35-44 (%)	45-59 (%)	60+ (%)	Total
Males						
Quit dates set (% of total quit dates set in age group)	32 (1.9)	430 (26.3)	405 (24.8)	478 (29.3)	284 (17.4)	1629
4 week quitters (% of total quits in age group)	8 (1)	156 (22)	179 (25.4)	211 (29.9)	150 (21.3)	704
% success	25	36	44	44	52	43
Females						
Quit dates set (% of total quit dates set in age group)	43 (1.7)	752 (30)	588 (23.4)	708 (28.2)	414 (16.5)	2505
4 week quitters (% of total quits in age group)	14 (1.3)	260 (24.8)	240 (22.9)	292 (27.8)	242 (23	1048
% success	33	35	41	41	58	42

Socio Economic Group / Employment
Smoking rates are high amongst manual workers and low socio economic groups. Reducing smoking amongst manual groups has been identified as a national priority and is a target set to support the narrowing of the health inequalities gap. There is no clear guidance from the Department of Health on how this target should be monitored and to date, monitoring information has not been requested. In Wirral, employment status is recorded on all smokers who access the Specialist

Service within SUPPORT but no analysis is achieved on these data. This is largely because of the time it would take to categorise all the data. Instead, most of the specialists working with the service categorise these data into one of five groups; employed; unemployed; retired; at home or employment status not known.

Table 15 shows the numbers and percentage of quit dates set and 4 week quitters falling into each of the five employment categories. This clearly shows that with the exception of women aged 60 years or over, more than 50% of all clients setting quit dates with SUPPORT, do not have employment status recorded. Discussion with SUPPORT has revealed that whilst the Specialist Service record employment status on all clients, this is not the case for Intermediate advisors. Therefore, the majority of the employment status data that are known, will relate to smokers accessing the Specialist Service rather than services in primary care, pharmacists etc.

In Wirral, 4.3% of the adult female population and 15.8% of the adult male population are unemployed. Of the age group 18-59, 6.3% of females and 10.3% of males accessing SUPPORT are unemployed (excluding those for whom employment status is not known). Therefore, if SUPPORT is to aim to recruit a proportionate number of its smokers from unemployed groups, unemployed men are under represented.

Smoking prevalence is higher in the lower social groups than higher social groups. Because data do not exist in Wirral to either analyse SUPPORT attendance and access by social group or manual group, encouraging higher than proportionate numbers of unemployed smokers into the service would be recommended.

Table 15: Number (and percentage) of people setting a quit date in each of the employment status categories recorded by Wirral SUPPORT

Employment group	Under 18	18-34	35-44	45-59	60 and over
Males					
Employed	0	145(34%)	159(36%)	161(31%)	32(8.8%)
Unemployed	0	42(9.8%)	41(9.3%)	61(11.7)	8(2.2%)
Retired	0	2(0.4%)	0	19(3.65%)	104(28.7%)
At home	0	0	6(1.3%)	1(0.2%)	0
Employment status not known	51(100%)	236(55%)	234(53%)	278(53%)	218(28%)
Females					
Employed	0	195(26%)	186(29%)	190(25%)	30(6.1%)
Unemployed	0	60(8.2%)	35(5.6%)	39(5.1%)	2(0.4%)
Retired	0	1(0.1%)	1(0.1%)	16(2%)	146(29.7%)
At home	1(3.5%)	75(10.2%)	51(8.2%)	69(9%)	16(3.2%)
Employment status not known	27(96%)	400(54%)	348(56%)	448(58%)	297(60%)

Black and Minority Ethnic Groups
98.3% of the Wirral population is White (of which 1% is White Irish)[14]. Therefore, there are approximately 2,342 people known to be from black and minority ethnic groups (BME) groups excluding White Irish. Of these, men are known to have a higher smoking prevalence than the general population of Wirral (as well as Black Caribbean women but there are very few registered women in this BME group). Overall, there are approximately 3,345 White Irish people living in Wirral with an adult smoking prevalence of 39% for men and 33% for women. This clearly shows that SUPPORT in Wirral should be demonstrating levels of access to BME groups over and above their proportionate representation within the Wirral population. However, In Bebington & West Wirral PCT, 0.3% of smokers setting a quit date with SUPPORT were from BME groups (of which 0.1% were White Irish) and in Birkenhead & Wallasey PCT, 0.16% of smokers setting a quit date with SUPPORT were from BME groups (of which 0.02% were White Irish).

Leaflets and booklets on smoking cessation are available from the Department of Health in six Asian languages. These are available from SUPPORT or Wirral Multicultural Centre. A meeting with the Equality and Diversity Manager has led to an improvement in access to BME groups and resources.

Non-written information in English only is available in the form of CDs, tapes, and Braille from SUPPORT upon request. Written versions of information for people with low literacy levels are also available.

SUPPORT has developed an action plan to focus efforts on tackling the issues identified in the health equity audit. A first review of the action plan was completed in September 2005 and showed that many actions have already been achieved or measures set in place to improve access. One of these actions includes successfully applying for neighbourhood renewal funding to employ a network of people from different BME groups to act as stop smoking advisors. It is hoped that this will break down some of the cultural and language barriers that have existed and increase the proportion of BME people accessing the service.

Smoke Free Wirral and Reducing Exposure to Second-Hand Smoke
The two Wirral PCTs, in partnership with the Local authority, provide funding to drive a smoke free Wirral strategy. The strategic plan has been in place for almost three years and most of the actions it set out in the action plan have been achieved. In part, this has been due to the support provided to the Smoke Free Wirral Strategic plan by 1.6 WTE dedicated staff and the strong commitment of each lead organisation. To demonstrate support right across Wirral for the aim of becoming a smoke free borough, 23 organisations signed up to a Smoke Free Wirral Charter and formed a Charter Group to implement the strategic plan. This included organisations such as local radio and press, businesses and police. The commitment to this by all the partners could be no better demonstrated than the agreement of Wirral Borough Council cabinet to take forward a motion for local legislation to ban smoking in public places, in advance of any national legislation to do so.

Through Smoke Free Wirral, implementing smoke free policies in public buildings

has been ongoing over the last three years. This leaves Wirral well ahead of the target of having smoke free NHS and local authority buildings by the end of 2006. Both PCTs, Wirral Hospital Trust and Wirral Borough Council all went completely smoke free, including grounds and buildings on National No Smoking Day on March 8th 2006.

Wirral was the first area to help all GP practices to implement Smoke Free policies. Support is currently being given to help all pharmacies to follow suit and dental practitioners are being supported to implement the same level of policy.

A Local Public Service Agreement for Wirral (2003-2006) includes the target to ensure 95% of schools have a written smoking policy in place and the majority of these will be completely smoke free by the end of 2006.

Comprehensive campaigns have been completed in Wirral to gain support for Smoke Free Wirral. These have included the 'Just Ask' campaign, encouraging people to ask for smoke free places.

Protecting children from second hand smoke was identified as a priority in the Smoke Free Wirral Strategic Plan and a pilot project has been completed. This was done with partners from health promotion departments across Merseyside and was evaluated by University of Liverpool. The success of this programme, which provided training to health and social care staff to help smokers avoid putting children at risk from second hand smoke, will be repeated during 2006 with support from Neighbourhood Renewal funding.

Prescribing of Nicotine Replacement Therapy and Zyban
A major part of the NHS strategy to encourage people to quit smoking has been to make Nicotine Replacement Therapies (NRT) and Buproprion (Zyban) available on NHS prescription.

NRT has been available on prescription since May 2001, and encompasses nicotine patches, gum, microtabs, lozenges, inhalators and nasal sprays. NRT works by delivering nicotine into the body without tar, carbon monoxide and other poisonous chemicals that are found in cigarettes. Once the nicotine withdrawal symptoms are controlled it is easier to give up smoking.

Zyban is a drug that was first developed to combat depression, and has been available on the NHS since June 2000. Zyban, by altering the level of some chemicals in the brain (neurotransmitters), works on the part of the brain involved in addiction and withdrawal and can relieve the withdrawal symptoms that you get when you stop smoking. Research shows that twice the number of smokers who take Zyban stop smoking compared to those that do not, the same success rate as NRT[21].

NRT and Zyban are among the most cost effective life saving interventions

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[21] National Institute for Clinical Excellence. Guidance on the use of nicotine replacement therapy (NRT) and buproprion for smoking cessation. 2002. NICE: London.
http://www.nice.org.uk/page.aspx?o=TA039guidance

available on the health care system and national smoking cessation guidelines recommend that GPs should provide accurate information on them both and prescribe them to smokers motivated to stop and who are seeking help to do so.

SUPPORT is very effective at ensuring that smokers setting a quit date, have access to either Nicotine Replacement Therapy (NRT) or Zyban. These therapies can double smokers' chances of successfully quitting and SUPPORT endeavours to make such therapies available to all smokers in contact with the service if it is clinically safe for them to use them. Over 90% of smokers setting quit dates with the service use NRT and smaller numbers (between 1.6% and 5.2% of smokers) use Zyban. Even amongst young people aged under 16 years, for whom Zyban and NRT was not previously licensed, the service has established systems to ensure that GPs can recommend young people for NRT use if they feel it is safe to do so. This has achieved 93% use in females and 96% use in males in this age group. Since the licensing guidelines have changed, the services have quickly amended their protocols to make NRT more available to young people.

Although NRT is generally widely used in Wirral to aid stop smoking, there are still inequities in relation to prescribing. An audit was undertaken by the Medicines Management Team on the prescribing of nicotine replacement therapy (NRT) and Zyban across Wirral between October 2002 and September 2005. Chart 19 shows the prescribing rates in three areas of Wirral. These are made up of Birkenhead Local Health Directorate (LHD), Wallasey LHD and Bebington & West Wirral PCT, with the rates calculated from individual GP figures.

Chart 19: Prescription rates of NRT and Zyban by Local Health Directorate or Primary Care Trust
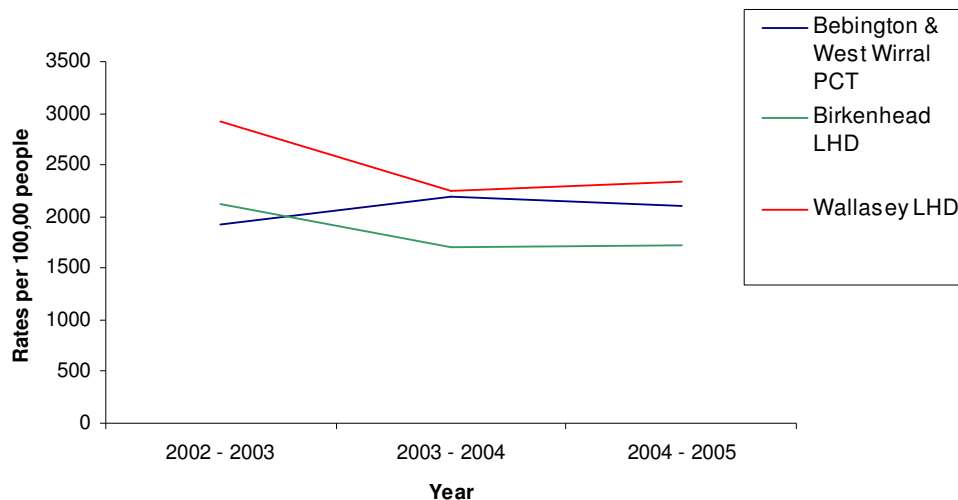
From Chart 19 it can be seen that prescribing rates for both Birkenhead LHD and Wallasey LHD have reduced over the three years since 2002-2003. It can also be seen that there has been a levelling off between 2003-2004 and 2004-2005. We would expect to see higher rates for Birkenhead LHD and Wallasey LHD as they have greater need to be reducing smoking. We have already seen the high lung SIRs and SMRs in areas such as Bidston, Birkenhead and Tranmere, which is likely to be attributed to the higher percentages of adults smoking in those areas.

Birkenhead LHD consistently had lower prescribing rates than the national and SHA averages for NRT. This is despite Birkenhead having higher levels of deprivation than the national and SHA averages and higher levels of smoking prevalence. Since August 2003, Birkenhead LHD has generally had the lowest prescribing rate of NRT out of the 3 Wirral LHDs.

Up to April 2003, Wallasey LHD had higher prescribing rates than national and SHA averages, but since April 2003 this has been lower. However, Wallasey LHD had the highest prescribing rate out of the 3 Wirral LHDs for the whole period the audit covered except the 2 months of June 2004 and August 2004 when BWW had slightly higher prescribing rates.

Between October 2002 and August 2003, BWW had the lowest prescribing rate of the 3 Wirral LHDs which might be expected as there are lower levels of deprivation and lower levels of smoking in BWW compared to the other 2 LHDs. However, other than a 3-month period between December 2004 and February 2005, they have generally had the 2nd highest prescribing rate and occasionally the highest.

Although the audit also covered prescribing of Zyban, as its usage is very low compared to NRT, this is not described here.

To try and reduce the risk of lung cancer, and other smoking related diseases, in the areas most in need, we would expect to see the GPs based in areas of high lung cancer rates to be prescribing higher rates of NRT and Zyban. Map 10 shows each GP's average prescribing rates over the three years, on top of underlying synthetic estimates of smoking prevalence.

Map 10: Average 3-yearly GP prescribing rates of NRT and Zyban over underlying synthetic estimates of smoking prevalence
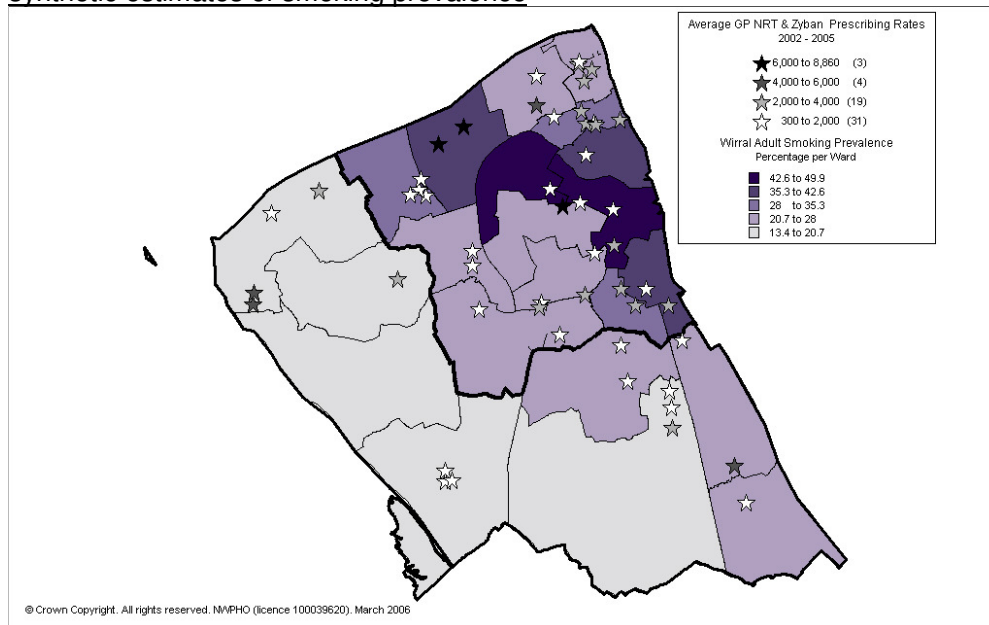
Smoking levels are strongly linked to deprivation, with areas of most deprivation having a greater percentage of smokers. This is evident from the map across

Wirral as a whole but especially in the Bidston, Birkenhead and Tranmere wards. The above map shows the average prescribing rates for the three years 2002-2003, 2003-2004, 2004-2005, and does not highlight any real concentration of similar rates in any one area, either geographically or by smoking percentages. Further analysis of the data shows a negative correlation, although not significantly (p>0.05), between prescribing rates and smoking, as prescription rates are higher in areas of lower smoking prevalence. This is highlighted in West Kirby where two GPs have relatively high prescribing rates, although they are situated in a less deprived area and have lower smoking prevalence. The opposite can be seen in the concentration of Wirral's most deprived areas, where the high prevalence of smoking is matched with a low prescription rate of smoking cessation aids.

Understanding / Attitudes to Disease

More than one in three people in this country will develop cancer. Most cases are in people aged over 60 years, but, as previously discussed, the habits we adopt earlier in life can alter the risk, sometimes dramatically. Two-thirds of all cancers are linked to lifestyle and could be prevented. For this reason many services have been set-up to try and reduce the community's risk of disease, including cancer. In Wirral there are three main services, Stop Smoking Service, Wirral Healthy Communities (community health development) and the Lifestyle & Weight Management Service.

A cancer awareness questionnaire was handed out to people accessing the Lifestyle & Weight Management Service. The questionnaire asked for information about the individual including their experience of certain illnesses and cancer in particular. They were then asked nine questions encompassing their knowledge of cancer and its risk factors. In total, 186 people completed the questionnaire, with the results seen in the tables below.

Map 11: Address of questionnaire respondents over Wirral LSOA National IMD quintile
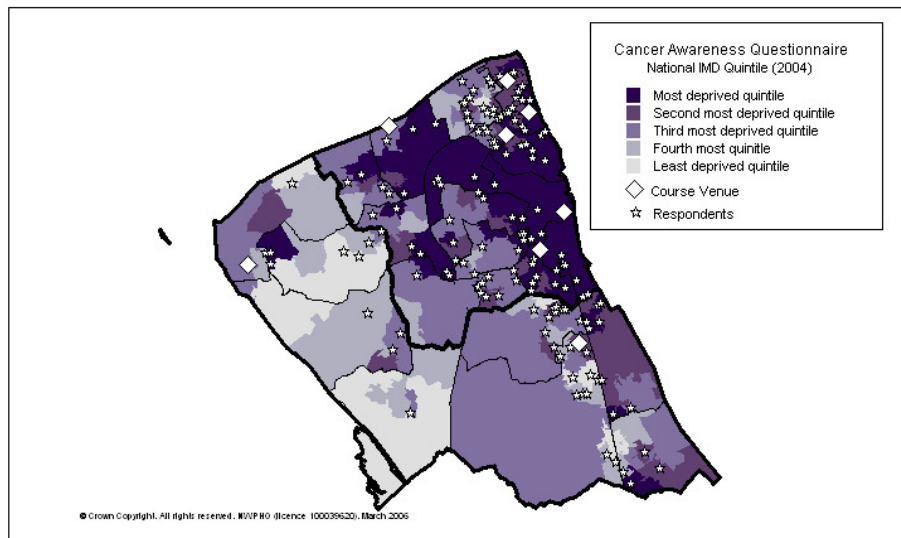
Map 11 shows the respondents of the cancer awareness questionnaire. The stars represent the respondents with the diamonds showing the main course venues of the Lifestyle and Weight Management Service. The deprivation quintiles for Wirral's LSOA have been used, because those in more deprived areas are more likely to have poor diet. From Map 11 we can see there are a concentration of respondents in Wallasey and New Brighton, and a sweep of respondents across the middle of Wirral, taking in areas of Moreton, Claughton, Oxton, Egerton and Tranmere. Map 11 also illustrates very few responders from areas of Bidston and Birkenhead, which are highly deprived and so should be targeted for this service.

Map 12: Address of questionnaire respondents over synthetic estimates of obesity prevalence at ward level
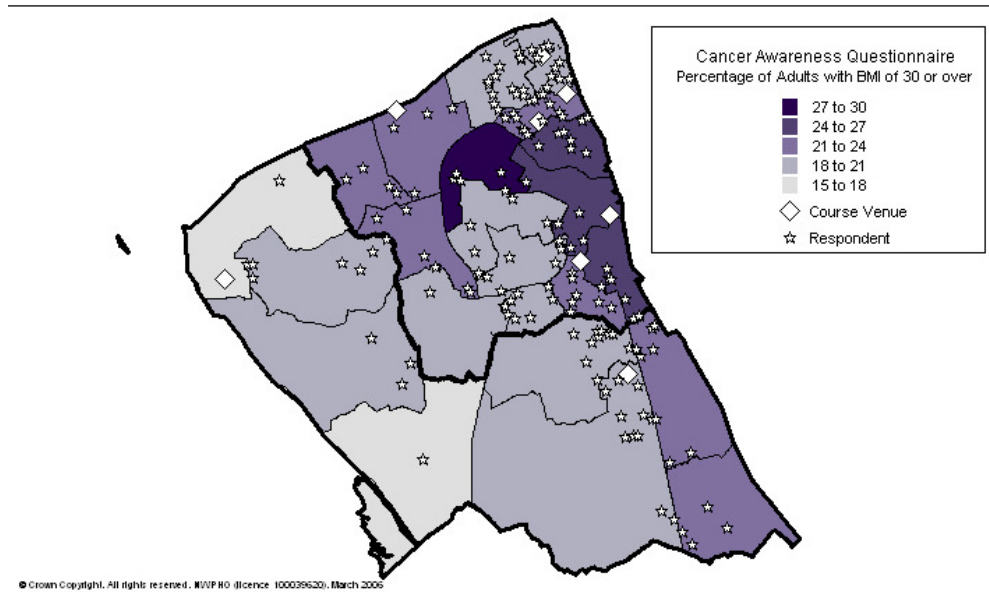
Map 12 shows respondents to the cancer awareness questionnaire over ward estimates for obesity prevalence. It is apparent that most respondents are from the areas with lower obesity prevalence rather than the wards with higher obesity prevalence. The wards with the higher estimated obesity prevalence are the most disadvantaged wards of Wirral. If we take the respondents to the questionnaire as a proxy indicator of where the Lifestyle & Weight Management Service clients live, we can see that the service is not being utilised by the people who need it most, those from the most disadvantaged areas of Wirral and those from the areas with the highest levels of obesity.

The cancer awareness questionnaires were handed out at the Lifestyle & Weight Management Service and were completed by 186 people. Far more women than men access the Lifestyle & Weight Management Service, so the higher number of females (115 females; 63 males) responding to the questionnaire was to be expected. The age profile of the respondents can be seen in Chart 20, with most respondents coming from the 50-59 years age group. The academic qualifications of respondents vary from none to a qualified surgeon. Over half of all respondents have no qualifications stated, with 42 people having attained GCSE, 'O' Level or 'A' Levels. Nine people have studied to graduate level and other qualifications accounting for 19 people and included City & Guilds, BTEC and nursing qualifications. Ethnicity was asked for and, as is representative of the Wirral population, only one person was not white and all but two classed themselves as British. As a result of this, meaningful analysis by ethnicity was not possible.

Chart 20: Age profile of cancer awareness questionnaire respondents
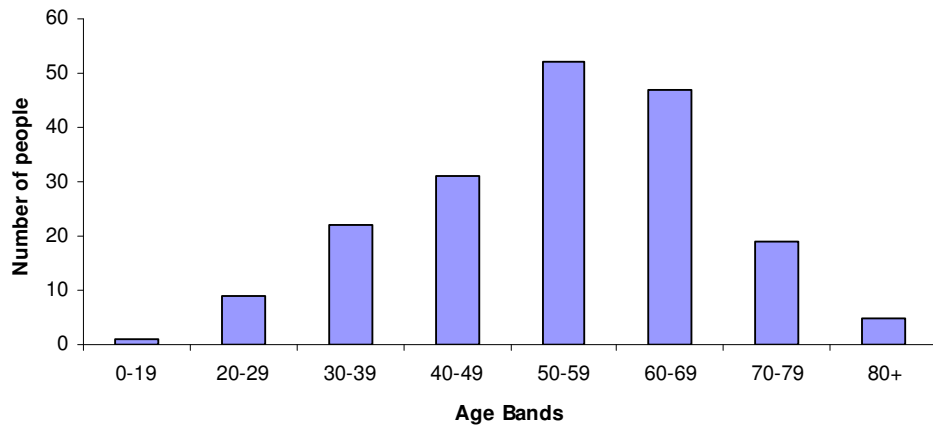
The data in the following tables are summaries of the full data (see Appendix 4) and have been grouped to show the percentage of respondents in each category achieving either 0-5 or 6-9 correct answers. This allows correct scores to be roughly differentiated into >50% and <50%. The categories have also been placed into smaller groupings so to produce roughly even numbers and as the original numbers would have provided limited opportunity for analysis.

Table 16: Percentages giving correct answers to questions by gender

Gender	0-5	6-9
Male	44	56
Female	45	55
Unknown	75	25

Table 16 presents the gender breakdown, and shows both men and women to be getting similar percentages of questions correct.

Table 17: Percentages giving correct answers to questions by age group

Age Bands	0-5	6-9
0-49	40	60
50+	50	50

In Table 17, showing two age bands, we can see that a higher percentage of younger people are getting more answers correct, although this is not statistically significant (p>0.05). We can see a link between this and the results by geodemographic groups (Appendix 4). Weathered Communities got the highest percentage of people getting 50% or less correct. This is consistent with the age band result as Weathered Communities are areas predominately populated by pensioners aged both under and over 74 years.

Table 18: Percentages giving correct answers to questions by contact or no contact with disease

Disease Group	0-5	6-9
Had / Contact Disease	44	56
None	56	44

Table 18 shows the groups who have had cancer or disease themselves or been in contact with cancer or disease through someone close to them had over 50% of people getting 6-9 questions correct. With only those who have had no contact at all having more than 50% getting 0-5 questions correct.

Table 19: Percentages giving correct answers to questions by academic attainment

Academic Group	0-5	6-9
Recognised Qualifications	31	69
Other	68	32
None	51	49

Table 19 has the results by academic qualification and shows that only those with a recognised qualification were more likely to get more than 50% of the questions correct. This links in with the geodemographic classification Blossoming Families, as the group had the second highest percentage of people getting six or more questions correct. Blossoming Families are well qualified and are also predominately in the 0-49 years age band.

Table 20: Percentages giving correct answers to questions by national deprivation quintile

Deprivation Quintile	0-5	6-9
Least	40	60
Fourth	40	60
Third	44	56
Second	37	63
Most	54	46

Table 20 shows the worst performing deprivation quintile was the most deprived, with just over 45% getting 6-9 questions correct. The most deprived group are least likely to be qualified and so reinforces the impact of academic level on knowledge of cancer issues. The scores of the most deprived group and the academic level relate to the geodemographic lifestyle groups as the worst performing groups were Urban Producers, Weathered Communities and Disadvantaged Households. These groups are unlikely to have qualifications and have high unemployment and long-term unemployment.

Waiting Time Analysis

Table 21 shows achievement against the 14-day target from urgent GP referral to first outpatient appointment for all suspected cancers between 1st April 2005 and 31st January 2006. The national target is 100% and adherence to this is closely monitored with all breaches investigated.

Table 21: Achievement of 14-day target across Wirral for all suspected cancers

	BKWPCT	BWWPCT	Wirral
Total Seen	1924	1122	3046
Total seen within 14 days	1911	1112	3023
Breaches where referral received within 24 hrs	8	4	12
Breaches where referral received after 24 hrs	5	6	11
Total number of breaches	13	10	23
% meeting 14-day target	99.3%	99.1%	99.2%

It can be seen from this table that achievement against the target is very high at over 99% for all cancers. Birkenhead & Wallasey PCT has a slightly higher overall achievement than Bebington & West Wirral PCT, but this is negligible.

The following analysis looks at waiting times by deprivation quintile. This provides an opportunity to analyse whether level of deprivation is a determinant in the amount of time lapsed between diagnosis and treatment. The information has been provided from the Wirral Health Informatics Service (WHIS) and is urgent GP referral records for colorectal and lung cancer, with a First Seen Date or First Treatment Date between 1st April 2005 and 31st January 2006. Percentages are shown for Wirral as a whole.

Colorectal Cancer

Table 22 shows achievement against the 14-day target from urgent GP referral to first outpatient appointment for suspected colorectal cancer between 1st April 2005 and 31st January 2006.

Table 22: Achievement of 14-day target across Wirral for suspected colorectal cancer

	BKWPCT	BWWPCT	Wirral
Total Seen	350	234	584
Total seen within 14 days	347	233	580
Breaches where referral received within 24 hrs	2	1	3
Breaches where referral received after 24 hrs	1	0	1
Total number of breaches	3	1	4
% meeting 14-day target	99.1%	99.6%	99.3%

It can be seen that performance against the 14-day target for colorectal cancer is also high with Bebington & West Wirral having a slightly higher achievement than Birkenhead & Wallasey patients. However, the number of breaches is so small that further analysis is not possible.

Table 23: Percentage of patients achieving 14-day target across Wirral for suspected colorectal cancer

	Least	Fourth	Third	Second	Most
% seen within 7 days of referral	21	20	15	9	18
% seen within 14 days of referral	79	80	84	91	81
% seen in more than 14 days of referral	0	0	1	0	1

It can be seen from Table 23 that only the third most and most deprived groups are having patients seen outside the 14-day target for urgent GP referral. In terms of who is seen quickest, the two deprived groups have the highest percentage of colorectal cancer patients seen within seven days.

Table 24: Percentage of patients achieving 31-day target across Wirral for colorectal cancer

	Least	Fourth	Third	Second	Most
% treated within 14 days	43	89	40	25	19
% treated within 31 days	57	0	35	50	50
% treated in more than 31 days	0	11	25	25	31

Table 24 shows only the least deprived quintile having all patients treated within the 31-day rule, with the most deprived group having the highest percentage not treated within 31 days of the decision to treat. The fourth most deprived quintile has a very high proportion of colorectal cancer patients receiving treatment with 14 days of the decision to treat, but unexpectedly has no patients treated between 15 and 31 days.

Table 25: Percentage of patients achieving 62-day target across Wirral for colorectal cancer

	Least	Fourth	Third	Second	Most
% treated within 31 days	14	11	0	38	19
% treated within 62 days	57	67	50	25	25
% treated in more than 62 days	29	22	50	38	56

In Table 25 the second most deprived quintile has the highest percentage of colorectal cancer patients treated within 31 days of referral. As in Table 26, the most deprived quintile has the highest percentage of patients treated outside of the target time period. The two least deprived quintiles have the highest proportion of patients achieving the 62-day target for referral to treatment.

From Tables 23-25 we can see the respective waiting time percentages of each deprivation quintile. In terms of waiting for treatment we can see that there are quite high proportions of colorectal cancer patients not achieving the 31-day and 62-day targets. For both of these targets the most deprived quintile has the highest percentage of patients not receiving treatment by the target deadlines.

Lung Cancer

Table 26 shows achievement against the 14-day target from urgent GP referral to first outpatient appointment for suspected lung cancer between 1st April 2005 and 31st January 2006.

Table 26: Achievement of 14-day target across Wirral for suspected lung cancer

	BKWPCT	BWWPCT	Wirral
Total Seen	138	76	214
Total seen within 14 days	138	76	214
Breaches where referral received within 24 hrs	0	0	0
Breaches where referral received after 24 hrs	0	0	0
Total number of breaches	0	0	0
% meeting 14-day target	100%	100%	100%

It can be seen that achievement of the 14-day target for suspected cancer is 100% across Wirral with no breaches taking place during the period of data collection.

Table 27: Percentage of patients achieving 14-day target across Wirral for suspected lung cancer

	Least	Fourth	Third	Second	Most
% seen within 7 days of referral	54	57	45	45	47
% seen within 14 days of referral	46	43	55	55	53
% seen in more than 14 days of referral	0	0	0	0	0

Table 27 shows all lung cancer patients in each deprivation quintile being seen within the 14-day target. Over half of lung cancer patients were seen within 7 days in the least and fourth most deprived quintiles.

Table 28: Percentage of patients achieving 31-day target across Wirral for lung cancer

	Least	Fourth	Third	Second	Most
% treated within 14 days	100	100	83	100	100
% treated within 31 days	0	0	17	0	0
% treated in more than 31 days	0	0	0	0	0

In Table 28, as with Table 27, all lung cancer patients who have urgent GP referrals were seen within the target time period. Only those in the third most deprived group didn't have 100% of patients treated within 14 days of the decision to treat date.

Table 29: Percentage of patients achieving 62-day target across Wirral for lung cancer

	Least	Fourth	Third	Second	Most
% treated within 31 days	0	60	33	40	50
% treated within 62 days	100	20	33	40	29
% treated in more than 62 days	0	20	33	20	21

It can be seen in Table 29 that only lung cancer patients in the least deprived quintile were all treated within the 62-day referral to treatment rule, although no patients were treated within 31 days. The third most deprived group have the highest percentage of patients failing to be treated within the 62-day target.

Tables 27-29 show the waiting time percentages of lung cancer patients for each deprivation quintile. Lung cancer patients in Wirral all met with the 14-day rule and the 31-day rule, but not all patients were treated within 62 days of referral.

Conclusion

We can see notable differences between colorectal cancer and lung cancer. Across all deprivation quintiles a much higher percentage of lung cancer patients are seen and treated within the targets than colorectal cancer patients. It can also be seen that treatment waiting time targets are less frequently achieved for colorectal cancer patients in more deprived areas than those in less deprived areas.

Treatment

In this section we are looking to see if there is any inequity in access, to a curative or palliative care treatment pathway by deprivation.

The two general types of treatment are curative care and palliative care. Curative care is concerned with treatment where the principal intent relates to the cure of the disease. Palliative treatment is therapy that relieves symptoms, such as pain, but does not alter the course of the disease. Its primary purpose is to improve the quality of life of the patient.

For the analysis of the treatments undergone by patients we have made a series of assumptions to allow us to decide whether a particular treatment pathway was curative or palliative. The assumptions that have been made are that any related surgery is classified as curative, and those who have received only chemotherapy and/or radiotherapy have been classed as undergoing palliative care as are those who have received no treatment. One of the main reasons for undertaking a simplified look at what constituted curative or palliative care was the lack of detail in the data sets. The data we used provided a list of the treatments but didn't describe whether the intent of the procedure was curative or palliative. Another major factor in making the assumptions was the distinct lack of staging information. After initial assumptions were made, the opinion of clinical professionals was sought to verify that they were acceptable. In using the assumptions on the MCCR data we found that 68% of all colorectal cancer patients in Wirral received curative care, this is only slightly less than the national average of 70 to 80%[22]. Using the same rules on the lung cancer patients, it was found that 16% received curative treatment. This is around the national average as only 20-30% of patients may be eligible for radical surgery[23].

The following charts have been formulated using the MCCR data and are shown as the percentage of people with colorectal or lung cancer receiving either curative or palliative care by IMD 2004 quintile.

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[22] National Institute for Clinical Excellence (NICE). (2004). Guidance on cancer services – Improving outcomes on colorectal cancers: Manual Update. www.nice.org.uk/pdf/CSGCCfullguidance.pdf

[23] Cancer Research UK – Information Resource Centre. Accessed 23/12/2005. Lung cancer symptoms and treatment. http://info.cancerresearchuk.org/cancerstats/types/lung/symptomsandtreatment/?a=5441
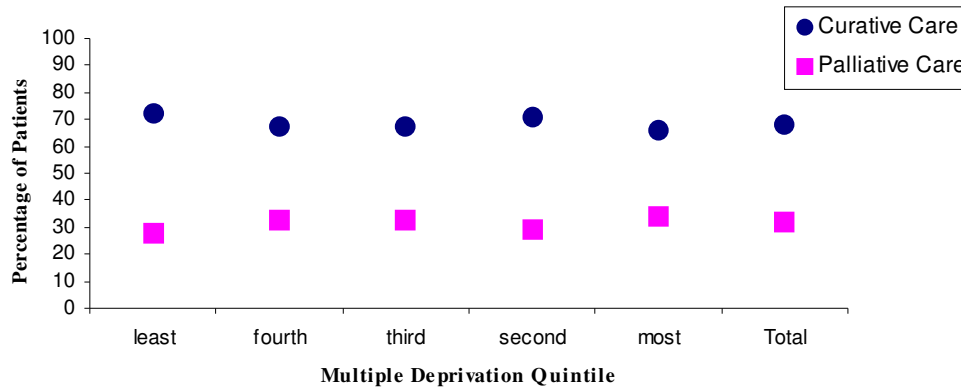
Chart 21 shows the percentages of treatment by deprivation quintile. From the chart we can see that there is no sign of inequity between those in the least deprived and those in the most deprived. Although the least deprived quintile has the highest percentage and the most deprived quintile the lowest percentage of patients getting curative treatment, the difference is only 7% and fluctuates between deprivation quintiles.

Chart 22: Percentage of lung cancer patients receiving curative or palliative care
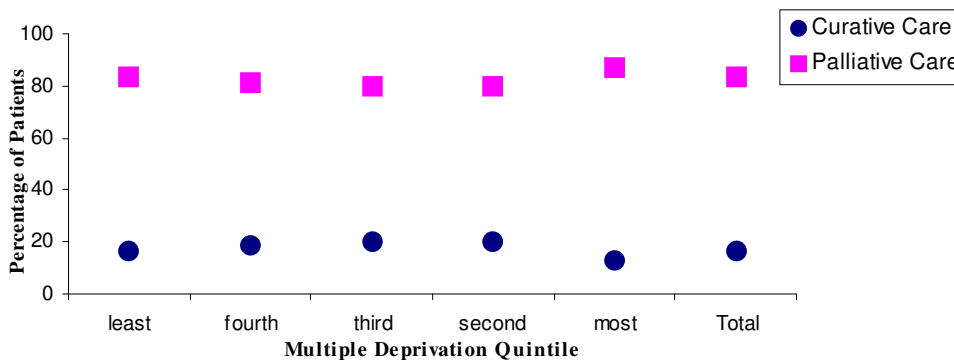
Chart 22 illustrates the percentages of patients receiving curative or palliative care by deprivation, and as with colorectal cancer, does not show a wide variation between levels of deprivation. Although those with the highest levels of deprivation (13%) have the lowest percentage of people receiving curative treatment, this is only 3% lower than the Wirral average for all lung cancer patients. This representation shows that there is no inequity across deprivation levels, especially as those getting curative care slightly increase in each group until the fourth most deprived quintile.

Summary
Overall while there are differences in the percentage of patients receiving curative care between the two cancers as you might expect. There is little difference by deprivation which suggest little inequity in provision.

Palliative Care

One of the aims of the Wirral Palliative Care Strategic Plan (2005-2008) is "to provide and resource an equitable integrated Specialist Palliative Care service across Wirral to all users by working with the Palliative Care Clinical Network Group". Table 30 shows the preferred place of death and actual place of death for palliative care patients[24]:

Table 30: Preferred and actual places of death for palliative care patients

Place of death	Preferred place of death	Actual place of death-all causes (national)	Actual place of death-cancer (national)	Actual place of death– cancer (MCCN)	Actual place of death-cancer (Wirral)
Home	56%	20%	25%	23%	23%
Hospice	24%	4%	17%	17%	15%
Hospital	11%	56%	47%	48%	52%
Nursing Home	4%	20%	12%	7%	6%
Other / Unknown	0%	0%	0%	5%	3%

It can be seen that cancer patients are more likely to die at their place of choice than general palliative care patients. Additionally, Wirral cancer patients are more likely than patients nationally to be able to die at their place of choice. However, there is still considerable work to be done to be done to ensure that all palliative care cancer patients are able to die at their preferred place of choice. Fewer Wirral cancer patients, in line with Merseyside and Cheshire Cancer Network (MCCN), die at home than nationally although this is the preferred place of death for the majority of people. Similarly, fewer Wirral cancer patients die in a hospice than nationally and than the rest of MCCN. More Wirral patients die in hospital than either the rest of MCCN and nationally, despite only 11% of patients preferring to die here. However, fewer cancer patients in Wirral die in nursing homes than in MCCN and the rest of the country, which is positive as this was least preferred place of death. Given these variations, it is clear that patient choice about place of death is currently not being achieved for all in Wirral, MCCN or nationally.

A Population-Based Palliative Care Needs Assessment[24] was carried out in 2005 for MCCN. All the information presented here from this report is in relation to people with cancer rather than to people with all palliative care needs. It identified that Bebington & West Wirral had 6% fewer specialist palliative care beds than required for people with cancer whilst Birkenhead & Wallasey had a 27% deficit. It appears therefore that consideration needs to be given as to how to bring access to specialist palliative care beds more in line with the needs of the PCT

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[24] Tebbit, P. (2005). A Population-Based Palliative Care Needs Assessment for Merseyside and Cheshire Cancer Network (Version 2).

populations.

Specialist palliative community care across Wirral does not appear to be compliant with NICE recommendations on the professional composition of teams and access to an out of hours service (NICE, 2004[25]). However, it is acknowledged that access to other professions may be available when required. If so, this needs to be formalised so that these staff members are considered part of the community team. It may also be helpful to consider integrating services across hospital, community and hospice settings to maximise the use of resources and to ensure compliance with NICE guidance and to provide a 24-hour service.

There is an absence of local data assessment on palliative care as this Needs Assessment was commissioned at a network, rather than local, level. This local data assessment is required to provide a picture of palliative care provision locally and what the issues are that need addressing. Additionally, information is required on what proportion of patients die at that their place of choice, and which patient groups are more likely to die at their place of choice, with respect to cancer group and demography.

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[25] NICE (2004). Improving Supportive and Palliative Care for Adults with Cancer. www.nice.org.uk Accessed 27th February 2006.

Survival Analysis

Cancer survival research is generally based upon histopathological results. However, this information is not available in the MCCR dataset. Instead this study focuses on the possible effect that gender, age and deprivation may have on survival time following diagnosis. The cause of death was not considered in this analysis, as the aim was to look at potential inequalities in survival time from date of diagnosis with cancer. Further investigation on the cause of any inequality would be required.

Survival data is generally not normally distributed as Chart 23 shows. Therefore the non-parametric Kaplan Meier Estimator of the Survivor Function is used for this analysis. The log rank test is used to compare groups; the hypothesis in each case is that there is no difference in survival between the groups of interest. The detailed methodology and results are outlined in Appendix 3.

Chart 23: Histogram of colorectal cancer patient survival times
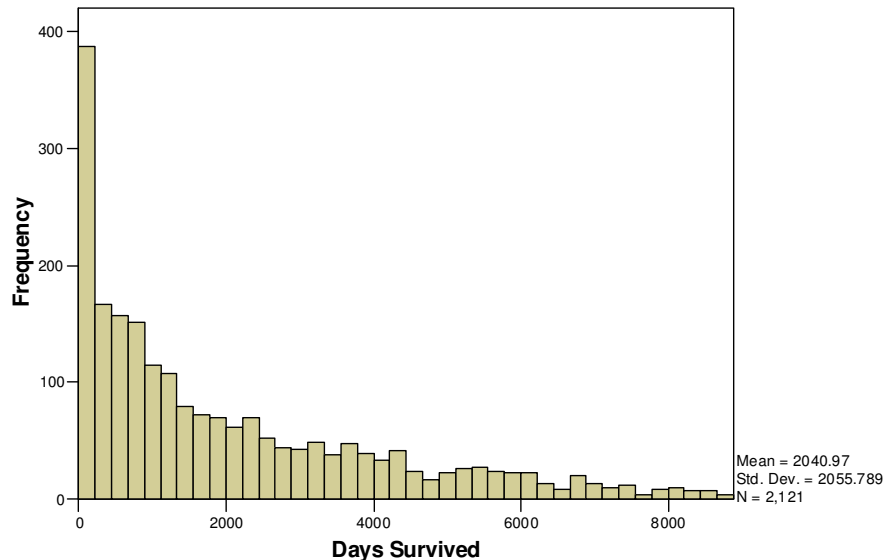
If data are skewed the median is a more appropriate measure of central tendency than the mean, which is more exposed to the effect of outliers.

In normally distributed data the median is the central data value. However the survival median is interpreted as the survival time associated with the first patient to have a cumulative survival probability of ≤ 0.5, i.e. the time when 50% of the patients in that group have died. If this is not reached then the median is not calculated. The detailed results are presented in Appendix 3. The remainder of this section presents a summary of the results.

Overall Survival

Colorectal Cancer

Overall there were 2,121 persons with colorectal cancer patients in data provided by the MCCR. The analysis studied an 8-year period, around 48% of the persons survived past the end point for the analysis. The probability of surviving 5 years is 57.3%. The median survival time is 2,979 days from date of diagnosis. The survival curve for colorectal cancer, Chart 24, shows a relatively steep decline between 0 and 2,000 days but this decline then lessens to around 8,000 days at which point it begins to flatten out.

Chart 24: Colorectal cancer survival curve

Colorectal Cancer Survival Function
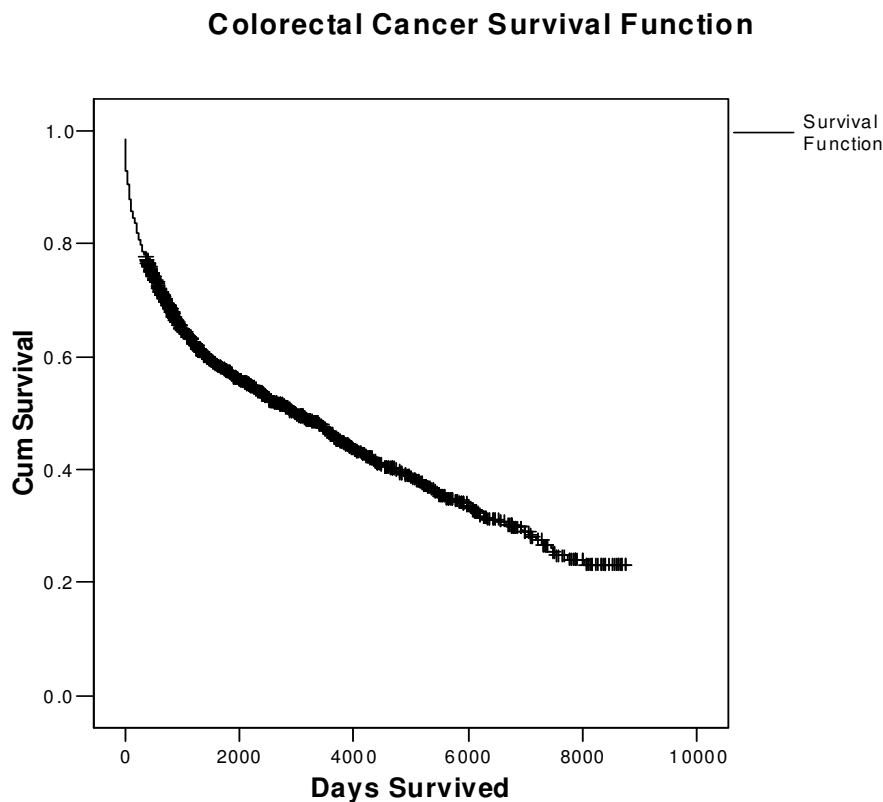
Lung Cancer

The lung cancer data consisted of 2,087 patients. Overall and after 178 days 50% of the patients studied had died. Around 15% of the persons survived past the end point for the analysis. The probability of surviving 5 years is 17.1%. The survival curve for lung cancer, Chart 25, shows a very steep decline between 0 and 500 days but this decline then lessens to around 8,000 days at which point it begins to flatten out.

Lung Cancer Survival Function

Analysis by Deprivation Quintile

The burden of disease, as outlined in the Cancer Trends chapter showed a strong correlation with deprivation for lung cancer while for colorectal cancer there was little association with deprivation. Previous analysis has shown that one of the main causes of inequality in access to services can be deprivation. As a consequence we have looked at the survival of persons by the national deprivation quintile of residence of the person with the cancer under consideration.

Colorectal Cancer
The least deprived quintile has the best median survival time for colorectal cancer of around 4,100 days whereas the middle deprivation quintile has the worst median survival time of 2,500 days. However, the differences in the survival times are not significant (P>0.05). The survival curves, Chart 26, show a similar picture to the overall colorectal cancer survival curve, which a sharp drop between 0 and 2,000 days post diagnosis and a flattening of the curve around 8,000 days. The curves also begin to separate after around 1,000 days with the least deprived quintile becoming clearly higher than the other four. As the curves begin to flatten out they begin to converge again.

Colorectal Cancer Survival Functions
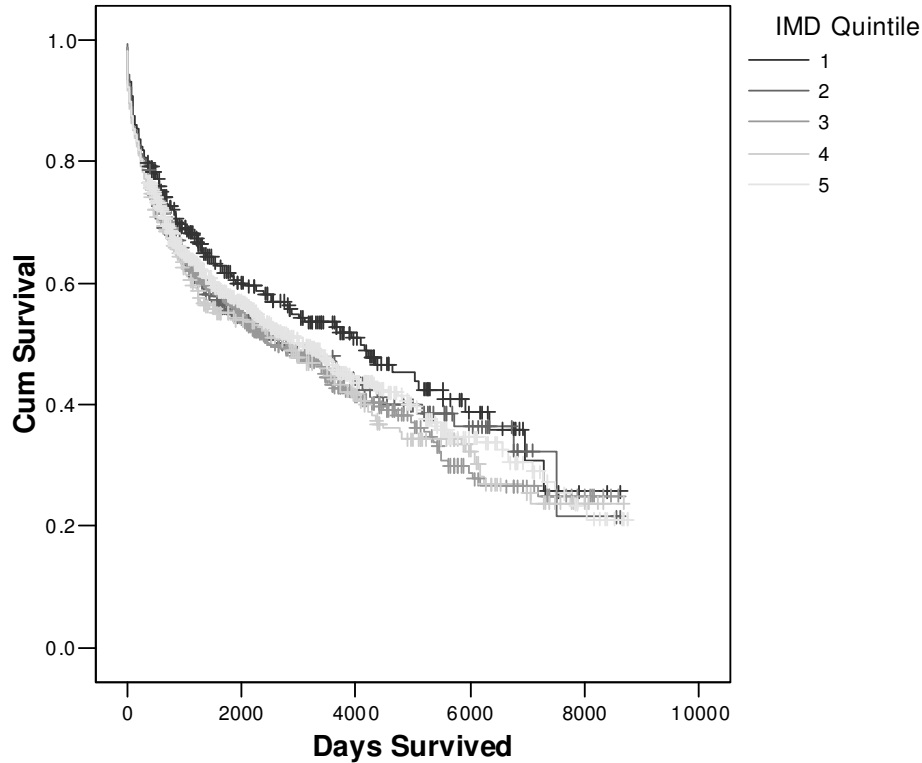
The probability of surviving past 5 years post diagnosis shows a similar pattern to the survival analysis as the least deprived quintile has the highest probability (61.2%) however the second most deprived quintile has the lowest probability (54.3%)

Lung Cancer
The most deprived quintile has the worst median survival time of 141 days and the second most deprived quintile has the best median survival time for lung cancer of around 219 days. The differences in the survival times are significant (P<0.01), while the analysis does not explicitly where the difference is, it suggests the difference is between the most deprived quintile and the other quintiles. The survival curves, Chart 27, show a similar picture to the overall lung cancer survival curve, which a sharp drop between 0 and 500 days post diagnosis and a flattening of the curve around 8,000 days. The curves also begin to diverge after around 1,000 days with the most deprived quintile becoming clearly lower than the other four.

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Lung Cancer Survival Function
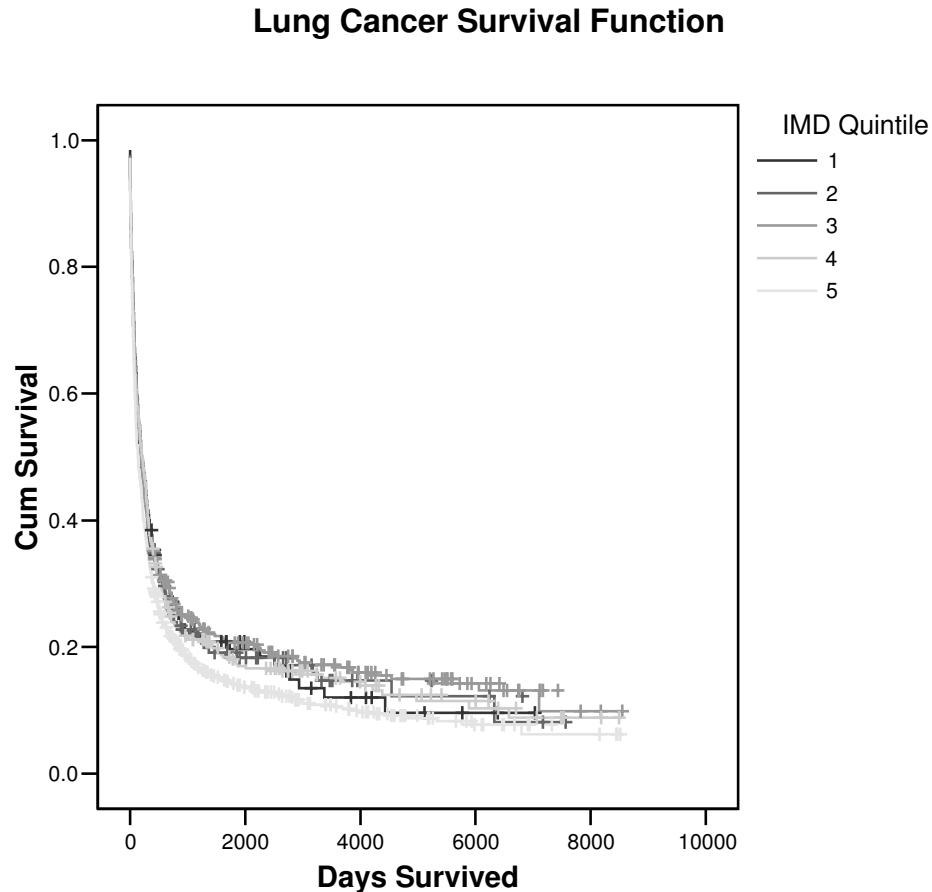
The probability of surviving past 5 years post diagnosis shows a similar pattern to the survival analysis as the middle deprivation quintile has the highest probability (20.4%) while the most deprived quintile has the lowest probability (14.1%).

Analysis by Sex

The cancer awareness questionnaire showed that potentially women had a slightly better understanding of the issues around cancer. While this was not significant it was felt appropriate to see if the survival times of women differed from that of men for the two cancers.

Colorectal Cancer

The total number of cases split into 1,100 male cases and 1,021 female cases. The analysis shows that females survive longer than males, 3,518 days compared to 2,442 days. The differences in the survival times are significant (P<0.02). The survival curves, Chart 28, shows both graphs follow the same path until around 500 days when they begin to diverge with the female curve remaining higher than the male curve for the remainder of the graph.

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Colorectal Cancer Survival Functions

Sex
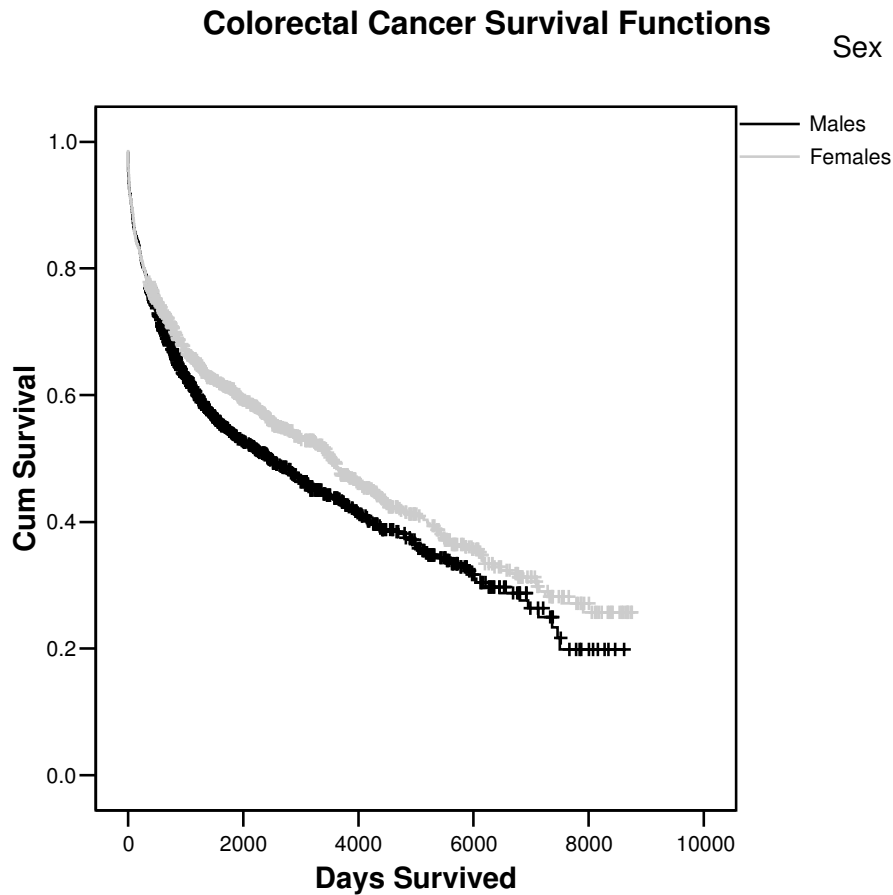
The probability of surviving 5 years again favours females, 60.8% as opposed to 53.8% for males.

Lung Cancer
The total number of cases split into 1,199 male cases and 888 female cases. The analysis shows that females survive slightly longer than males, 188 days compared to 167 days. The differences in the survival times are not significant (P>0.5). The survival curves, Chart 29, shows both graphs follow the same path until around 7,000 days when they begin to diverge with the female curve remaining higher than the male curve for the remainder of the graph.

Lung Cancer Survival Function
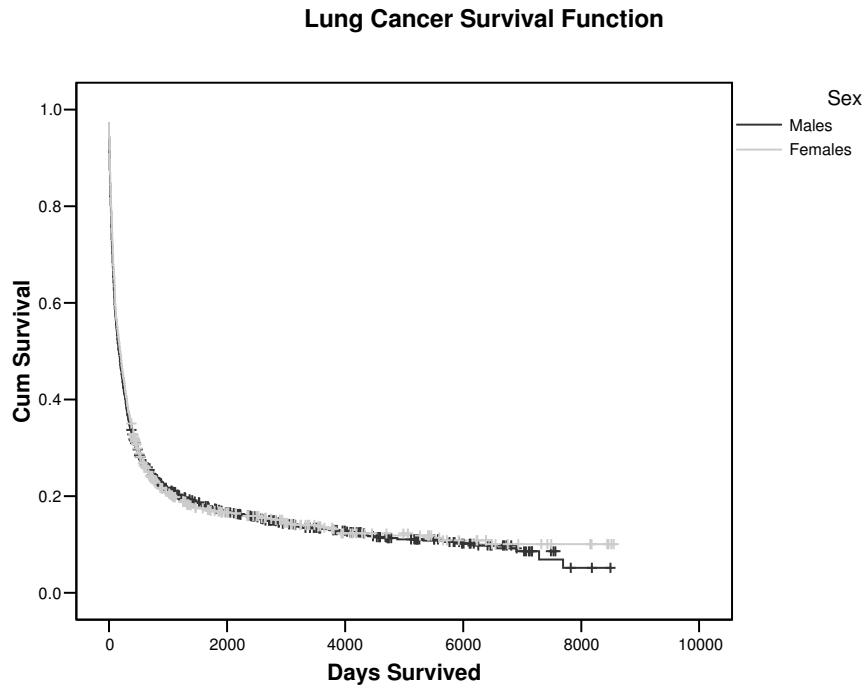
The probability of surviving 5 years shows a different picture with females doing better than males, 17.3% as opposed to 16.8%.

Analysis by Age

The cancer awareness questionnaire responses showed younger people (aged 50 years or less) had more awareness of issues relating to cancer. While both lung and colorectal cancer are predominantly a disease of older people there were still a small number of younger people diagnosed with both cancers. While a number of factors can affect survival which make it more likely for younger people to survive longer it is still useful to look at the difference in survival rates between those less than 50 years and those 50 years and over.

Colorectal Cancer

The analysis shows a significant difference between these two age groups (P<0.01). The median is not calculated for patients aged 50 years or less, meaning over 50% of these patients are alive at the end of the study. However for the older patients 50% of them will die before 7.2 years (2,655 days). The mean for persons aged 50 years or less is over 6,500 days compared to the mean for the over 50 years age group of less than 3,750 days. The survival curve, Chart 30, shows that for those aged over 50 years the curve follows a similar trend as the overall colorectal survival curve. For those aged 50 years or less the curve is much flatter and remains much higher than the curve for the over 50 years age group.

Colorectal Cancer Survival Functions
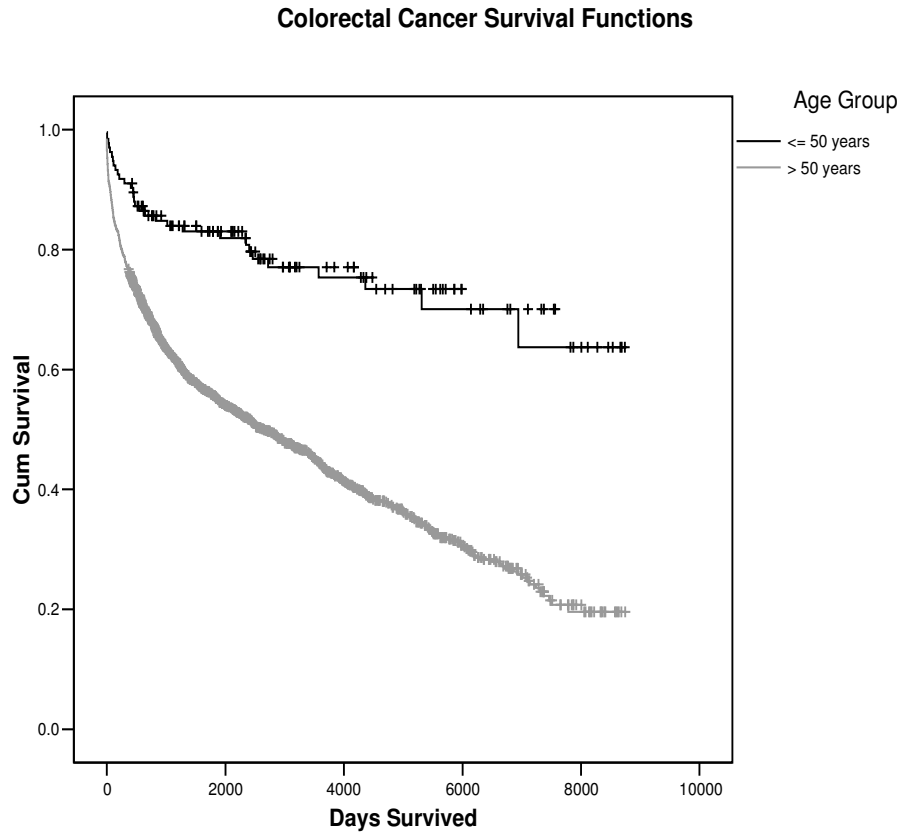
The 5 year survival rates strongly favour the younger patients with 82%, which is higher than overall; the rate for patients over 50 years is slightly less than that for overall with 55.5%.

Lung Cancer
The analysis shows a median survival time of 431 days from date of diagnosis for those 50 years old and less while for those over 50 years the median survival time is 167 days. The differences in the survival times are significant (P<0.01). There are fewer patients 50 years old or less at 98 and 1,989 over the age of 50 years. The survival curves in Chart 31 both show a similar pattern with steep drops between 0 and 500 days survival; both curves flatten around 1,000 days. However the curve for those over 50 years old is clearly lower than the curve for the younger age group.

Lung Cancer Survival Function
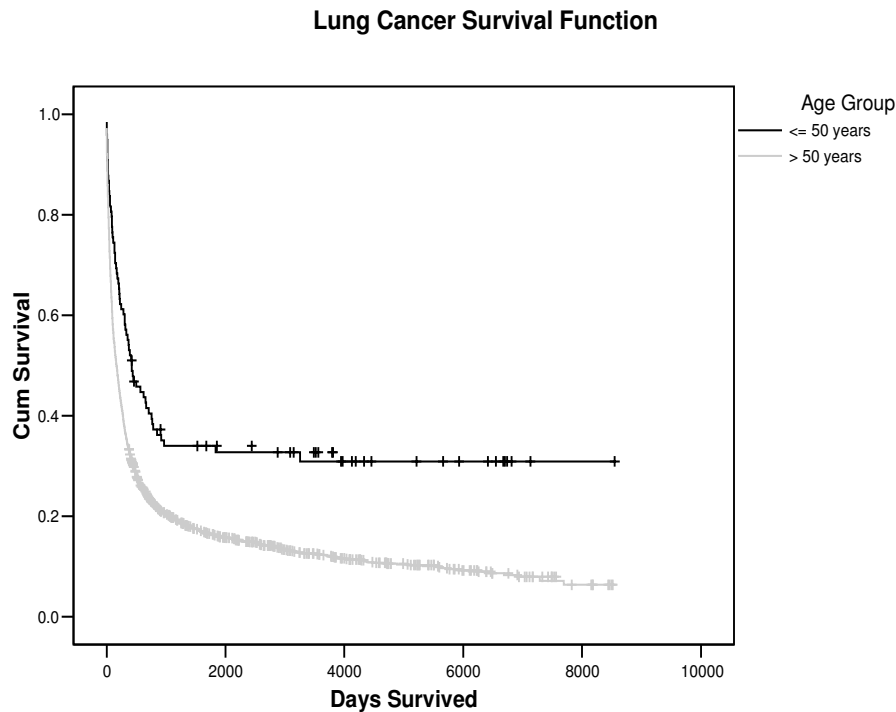
The five year survival rates also illustrate the difference between these two groups for those patients 50 years old or less the percentage is 32.7% which is more than double the rate of those patients over 50 at 16.2%.

Months Life Lost Analysis

The life expectancy in Wirral is on average about 1 year less than the England and Wales average for both males (75 yrs) and females (80 yrs). Analysis by cause undertaken by the North West Public Health Observatory shows that in Wirral, both males and females are losing 2.5 months life expectancy due to lung cancer. For colorectal cancer males are losing around 0.5 months and females slightly less than this. Improvement in both Lung and Colorectal survival rates would help to reduce the gap in life expectancy helping in the achievement of local and national targets.

Other issues

Ethnicity
It was not possible to analyse data from the Merseyside and Cheshire Cancer Registry by ethnicity as the recording of this variable was too low. This indicates that the data is therefore not being collected by primary care and/or secondary care. Evidence suggests that people from all ethnic groups, other than Scottish and Irish, have lower cancer mortality than people of a white English or Welsh background[26]. However, it is also known that people from minority ethnic groups are more exposed to some of the risk factors for cancer, in particular smoking, poor diet and obesity.

Self reported cigarette smoking prevalence among men and women from minority ethnic groups is shown in Table 31. This highlights that several minority ethnic groups have smoking prevalence higher than the overall population national average and are thus at an increased risk of lung cancer than other groups.

Table 31: Cigarette smoking prevalence among men and women from selected minority ethnic groups

Minority ethnic group	Prevalence (men)	Prevalence (women)
Bangladeshi	44%	1%
Irish	39%	33%
Black Caribbean	35%	25%
Pakistani	26%	5%
Indian	23%	6%
Chinese	17%	9%

It has been identified that Asian, Black and Mixed Race minority populations have lower rates of setting smoking quit dates than White groups for both men and women[27]. Additionally, females are more likely to set a quit date than males in every ethnic group. Therefore, smoking cessation services should target people from Asian, Black and Mixed Race groups, and in particular men.

Obesity rates are higher amongst certain ethnic groups, in particular Black Caribbean and Pakistani women. It is thought that this is due to a combination of genetic and lifestyle factors[28].

Knowledge about the risk factors associated with poor heath, through poor diet and smoking, for example, is very limited amongst some ethnic groups. This could be a reason why more people from minority ethnic groups do not engage in health promoting activities designed to support people to change risky lifestyle behaviours[29]. Therefore, health promotion activities need to ensure they access people from minority ethnic groups in order to raise awareness of risk factors, such

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[26] Association of Public Health Observatories. Indications of Public Health in the English Regions: Ethnicity and Health.
[27] Department of Health. 2000. Health Survey for England 1999: The health of minority ethnic groups. http://www.dh.gov.uk/PublicationsAndStatistics
[28] National Audit Office. 2001. Tackling Obesity in England. The Stationery Office.
[29] Gervais, M.C. and Rehman, H. Ethnic Minority Young People and Health. http://www.ethnos.co.uk/national%20heart%20forum%20article.pdf Accessed 22nd February 2006.

as smoking and poor diet. Lifestyle change interventions also need to be culturally appropriate so as to attract people from minority ethnic groups.

People with Learning Disabilities
Data on people with learning disabilities is not readily accessible due to issues with primary care read codes. Consequently, hospital records and cancer registry records are not able to identify these individuals. However, studies have shown that there are higher rates of obesity amongst people with learning disabilities[30] which is a risk factor for certain types of cancers. It also suggests this group of people have poorer diets and are therefore more likely to develop colorectal cancer.

Although people with learning disabilities are less likely to smoke than the general population, a recent study found that smoking levels in this group are still 1 in 5[31]. Additionally, it has been shown that people with learning disabilities who do smoke are likely to receive less support to stop and less likely to engage in health promotion services. Therefore they have more chance of remaining smokers and thus are at increased risk of developing lung cancer.

Primary care read codes that easily identify people with learning disabilities need to be utilised so that cancer equity issues relating to this group of people can be examined and action to address any inequities can be implemented.

It is known that people with learning disabilities are less likely to attend cancer screening for breast and cervical cancers. The introduction of the bowel cancer screening programme in September 2006 could be of particular benefit to people with learning disabilities given that, as stated above, they are more likely to develop colorectal cancers through poor diets. However, the nature of the proposed programme is likely to deter many such people from participating.

Consideration of how the bowel cancer screening programme can be made more readily accessible for people with learning disabilities needs to be considered before implementation to ensure the maximum possible uptake amongst this group of people.

Patient Satisfaction with Services
Full patient satisfaction surveys are not currently available for any of the services discussed in this document. Such surveys should be carried out routinely to ensure patients are satisfied with the services they are receiving and to inform any future changes to service delivery.

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[30] NHS Health Scotland. (2004). Health Needs Assessment Report: People with Learning Disabilities in Scotland.
[31] Emerson, E., Malam, S., Davies, I., and Spencer, K. (2005). Adults with Learning Difficulties in England 2003/2004. Health and Social Care Information Centre.

Conclusion and Recommendations

This Wirral Cancer Equity Audit has systematically reviewed equity in access to prevention, diagnosis, treatment and palliative care for colorectal and lung cancers across Wirral. This report represents the first stage in an ongoing process. The next stage should be that resources and interventions are targeted at those groups and areas found to have the greatest inequity between need and provision. The following stage should then be an assessment of whether the action taken has reduced inequities and what further action, if any, is required. It is recommended that this takes place in 2008/2009 to form a 3-year equity audit cycle. A number of inequities have been identified and as a result, recommendations follow as to the action that needs to be implemented in order to remove these inequities:

Prevention
It is clear that there is evidence regarding a number of effective ways to decrease smoking, improve diet and decrease obesity levels. This evidence needs to be incorporated into strategic plans, such as the Tobacco Control, Food and Health, and Obesity strategies and inform future delivery of services and interventions.

Stop Smoking Services
This audit has identified some degree of inequity in the provision of and access to stop smoking support. It has also highlighted that inadequate data mean that there are several groups who are known to have high smoking prevalence (and therefore increased risk of developing cancer) for whom level of provision and access is not known. These groups are people with mental health problems, those with learning difficulties and people who are homeless. The following recommendations, if implemented, should improve data collection to enable a clearer picture of how inequity is being addressed and also tackle some of the inequities that have been identified. It is intended that this will lead to reduced smoking in high prevalence groups and reduced risk of developing lung cancer in areas of Wirral with higher than average standardised registration rates.

1. The proportion of people aged 34 years and under, accessing SUPPORT should be increased. In particular, there are low numbers of females in this age group accessing stop smoking support even though women living in Birkenhead have a standardised registration rate for lung cancer of 174 compared to England.

2. The Wirral Stop Smoking service; SUPPORT is currently looking to relocate to larger premises. Strong consideration should be given to the need to ensure that access to people living in the most disadvantaged area of Birkenhead is the over riding priority when planning location. Lung cancer strongly correlates with deprivation and the north of Birkenhead demonstrates increased deprivation, smoking prevalence and lung cancer, compared to the rest of Wirral.

3. The dataset used to manage patients and monitor SUPPORT should be modified to enable increased reporting of specific groups known to have

high smoking prevalence. These groups include people with learning difficulties, mental health problems, black and minority ethnic groups and those that are homeless. Some of these categories are difficult to define and information difficult to collect from patients and may need to be considered in terms of proxy indicators.

4. SUPPORT should increase the proportion of young people aged less than 18 years that set quit dates with the service. In particular, more females in this age group need to be encouraged into the service because of high smoking prevalence. However, it should be noted that low success rates can be expected. Hence, the service must make sure it makes use of existing evidence base to maximise effectiveness and also, that efforts are made to fully evaluate any interventions so that the body of knowledge in this area can be increased.

5. The data capture on all clients should be expanded to include two additional categories; 16/17 years and under 16 years. These groups cannot currently be reported on separately from the SUPPORT database.

6. The two Wirral PCTs should consider ways of working with partners to increase stop smoking support to specific target groups with high smoking prevalence. It is recommended that the Wirral Health and Well-being group, in its capacity as the lead partnership for health promotion and health improvement, prioritise the need to address inequity in stop smoking support through strategic and operational partnership plans. The target groups that should be considered are young people, especially females, unemployed, manual workers, people with mental health problems or learning difficulties, the homeless and males from all BME groups and white Irish women.

Smoke Free Wirral
The recent announcement that comprehensive legislation to ban smoking in public places will be implemented in 2007 is extremely welcome news. To some extent this will override many of the targets previously contained within the Smoke Free Wirral Strategic Plan. However, it is important that Wirral makes plans to support the effective implementation of the legislation and ensures that it is equitably applied throughout the Borough.

Protecting people within the home from second hand smoke has already been identified by Smoke Free Wirral as a priority. It is recommended that the Wirral Health and Well-being group oversee this work and ensure that all partners commit resource and expertise to ensure it is effectively implemented and evaluated.

Lifestyle & Weight Management Service
This equity audit has identified inequities in the provision of and access to the Lifestyle & Weight Management Service. In particular, there is under-representation of men, those in the most disadvantaged areas, and those from non-white ethnic groups. Work should be carried out that identifies why these

groups are not accessing the service as much as others, and put in place appropriate interventions to make the service accessible to them redressing these inequities.

Healthy Eating Information
It has been identified that access to information regarding healthy eating is restricted to certain languages and formats, and thus has created an inequity in access to it. Consequently, culturally appropriate information on the balance of good health and 5 A DAY should be readily available in a variety of formats and languages, including non-written information in the form of cassettes, CDs, videos and DVDs.

Cancer Knowledge and Awareness
The cancer knowledge and awareness questionnaire identified inequities amongst certain groups in terms of access to knowledge and awareness of cancer risks. These groups are those aged 50 years and over, those living in the most deprived areas and those with the lowest levels of educational attainment. These groups of people are at a higher risk of developing cancer than other groups, and consequently should receive information, in an appropriate form, that will increase their knowledge and awareness of cancer risks.

Waiting Times
There are significant differences between colorectal cancer and lung cancer with respect to waiting times. Lung cancer patients are seen and treated within the targets much more frequently than colorectal cancer patients. Additionally, treatment waiting time targets are less frequently achieved for those living in the highest areas of deprivation compared to those in the lowest levels of deprivation for colorectal cancer. The reasons for these differences should be examined further and appropriate action put in place to ensure that all groups are meeting the waiting times targets.

Treatment
The equity audit has identified that there is no inequity between the least deprived and most deprived areas of Wirral in terms of the proportions of people receiving curative treatment and palliative treatment, which indicates that people from all areas are presenting and/or being diagnosed at similar stages of cancer. This position should be monitored to ensure this situation continues.

Palliative Care
The information regarding equity in access to palliative care was at PCT level as the Palliative Care Needs Assessment was commissioned at a cancer network level. Information should be made available at a lower level so that inequities within various groups across Wirral can be identified. However, a number of recommendations have arisen. These include:

1. Consideration should be given regarding how access to specialist palliative care beds can be brought more in line with the needs of the PCT populations.

2. Palliative care services should be integrated across hospital, community and hospice settings to maximise the use of resources and to ensure compliance with NICE guidance and to provide a 24-hour service.

3. A review should be undertaken regarding how access to specialist day care / therapy can best be changed to achieve greater equity of access across Wirral.

Other Issues

It is known that people from some ethnic backgrounds have very low knowledge and awareness of the cancer risks that certain lifestyle factors present, including smoking and a poor diet, and that some ethnic groups engage in higher levels of these risky lifestyle behaviours than other groups. These groups should receive culturally appropriate information regarding cancer risks.

Analyses of data by ethnic group were not possible because of low recording of ethnicity. This recording should be improved so that future analyses are possible, inequities identified and appropriate recommendations made.

Primary care read codes that easily identify people with learning disabilities should be utilised so that cancer equity data relating to this group of people can be analysed and action to address any inequities can be implemented.

Full patient satisfaction surveys are not currently available for the services discussed in this document. Such surveys should be carried out routinely to ensure patients are satisfied with the services they are receiving and to inform any future changes to service delivery.

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Appendices

Appendix 1 - People and Places Classification

The following is a brief description of each of the 'P2 People and Places'$^{©}$ lifestyle groups as supplied by Beacon Dodsworth. Population percentages (Pop %) refer to the percentage of the regional population in that category. Poverty percentages (Poverty %) refer to IMD 2004.

A. Mature Oaks (Pop 11.3%, Poverty 3.8%) – Commonest in Macclesfield, Ribble Valley, Chorley, Stockport.
These are older, mostly married adults, living in owner occupied large detached houses with large gardens in rural areas. Each household is generally quite wealthy, with professions usually comprising managers, professionals or employers. A good proportion may work from home.

B. Country Orchards (Pop 3.6%, Poverty 5.3%) - Commonest in Eden, South Lakeland, Allerdale, Carlisle.
These rural areas predominantly contain agricultural workers, though mostly in the position of manager or employer. Many are well educated with qualifications and high incomes. It is also likely that people will be self-employed. This group is mostly older adults, who own big detached houses with large gardens.

C. Blossoming Families (Pop 5.3%, Poverty 4.6%) - Commonest in Warrington, Congleton, South Ribble, Glossop.
These are families with mainly infants, with the parents being 25-34. They are buying their detached houses, and are very likely to be married. The average household will contain 2 or more people. The adults are well qualified, and well paid, and are mainly professionals, managers or employers. A large proportion of women in this area also work.

D. Rooted Households (Pop 16.3%, Poverty 6.7%) - Commonest in South Ribble, Congleton, Ellesmere Port, Wigan.
In this area, people are mainly buying, or have bought, their houses, which are mostly semi-detached. The workers in this area are mainly skilled manual workers, though the income they receive is quite high.

E. Qualified Metropolitans (Pop 0.9%, Poverty 8.1%) - Commonest in Manchester, Trafford, Stockport, Chester.
Those who live in these areas are highly qualified, and live mostly in single households, likely to be small accommodation, such as flats or bedsits, with no car, and concentrated in the centre of cities. They are professional people, who commute to work on the train, and have well paid jobs. There are a high proportion of females between the ages of 16 and 44, and the professional men are likely to be aged between 35-54. There are likely to be a high proportion of Jewish people in this area, as well as Chinese, Black and Indian or Pakistani. Many move house early.

F. Senior Neighbourhoods (Pop 3.8%, Poverty 9.3%) - Commonest in Fylde, South Lakeland, Wyre, Chester.
These areas contain pensioners and old people, who live in their owner occupied detached houses, which can have very large gardens. A lot of these are single

occupant households, but these occupants can be quite affluent. They are also quite likely to own a second home.

G. Suburban Stability (Pop 16.1%, Poverty 12.3%) - Commonest in Glossop, Blackpool, Copeland, Tameside.
This area contains semi-detached and terraced housing, occupied by skilled manual, routine and semi routine workers.

H. New Starters (Pop 2.6%, Poverty 19.1%) - Commonest in Manchester, Lancaster, Preston, Liverpool.
This group contains a high proportion of students and highly qualified young adults. There are also a high proportion of females aged 16-44. Many live in single households without a car, and much of the accommodation is bedsits, purpose built flats, and small accommodation. There is a high proportion of cohabiting within this group. Many of the properties do not contain central heating. Income is low, as most classified here are students

I. Multicultural Centres (Pop 4.2%, Poverty 34.8%) - Commonest in Blackburn, Pendle, Manchester, Preston.
This group is predominantly families living in terraces, but also includes a high proportion of bedsits and purpose built flats. Accommodation is mostly housing association or council owned, and a lot does not have a garden. Most households have no car, and generally travel to work by train, and have low incomes. There are also many lone parents. The majority of the population of this group are Jewish, Muslim, black, Chinese, Indian, Pakistani and Bangladeshi. They are mostly employed as semi skilled manual and unskilled workers. Unemployment amongst males and long-term unemployment is also high amongst this group, as is the incidence of long-term illness.

J. Urban Producers (Pop 15.9%, Poverty 23.7%) - Commonest in Barrow, Halton, Tameside, Burnley.
Those in this group live mostly in terraced council housing, and a lot of these homes are without central heating or gardens. Age of occupants is generally 25-34 with children, mostly single parent households. People are very unlikely to have qualifications, and jobs Includes routine, or semi-routine occupations, skilled manual workers, jobs in manufacturing, and also in semi and unskilled manual jobs. Incomes are low, and unemployment and long-term unemployment is high, as is long-term illness. Car ownership is also low. This group are very likely to smoke.

K. Weathered Communities (Pop 8.9%, Poverty 26.3%) - Commonest in Allerdale, Blackpool, Liverpool, St Helens.
This group contains a high proportion of pensioners both under and over the age of 74, and has many single households, living mostly in semi detached housing or purpose built flats. There is also a high incidence of lone parent families. Housing is likely to be housing association and council owned, and generally small accommodation. Income is low, as is car ownership. Unemployment and long term unemployment is high, as is long-term illness. Those who do work are employed in routine or semi routine occupations, manufacturing and semi and unskilled manual jobs, and most do not have qualifications.

L. Disadvantaged Households (Pop 7.0%, Poverty 42.0%) – Commonest in Knowsley, Liverpool, Manchester, Sefton.
This group contains families, lone parent families, and 25-34 year olds with children. Accommodation is council and housing association owned, and includes purpose built flats and terraces, many without central heating. Households also are very unlikely to own a car. Incomes are low, qualifications few, and jobs Includes semi and routine occupations and semi and unskilled manual work. Unemployment and long-term unemployment and illness are high.

M. Urban Challenge (Pop 3.7%, Poverty 45.0%) - Commonest in Liverpool, Manchester, Barrow, Salford.
This group comprises old people, who live in purpose built flats, council and housing association owned homes, and in small accommodation. Unemployment and long term unemployment is high, as is long term illness, and incomes are low. This group are extremely likely to smoke. Households mainly consist of one person, and car ownership is low. There is a low incidence of qualifications, and those with jobs work in semi and routine occupations.

U. Unclassified (Pop 0.3%, Poverty 16.9%) - Commonest in Blackburn, Manchester, Stockport, Oldham.

Appendix 2 – Analysis Methodologies

Calculation of Standardised Illness Ratios

Standardised Illness Ratios (SIR) have been used to present the Prevalence of Lung and Colorectal Cancer data shown in the maps of this report. They have been calculated at the LSOA Geography. This method has been used on both data from the Merseyside and Cheshire Cancer Registry (MCCR) and the Hospital Episode Statistics (HES).

Dividing the expected number of persons with the condition by the actual number of persons with the condition produces the final ratio. The following sub-sections outline the steps involved in calculating the actual and expected number of instances.

a) Extract of Data – HES and MCCR (Actual)
1. Records were extracted from the annual Hospital Episodes Statistics (HES) data for the years 1998/99 to 2002/03.
2. Patients with the condition of interest are selected from the HES Data in accordance with the age, admission method and relevant diagnosis.
3. The MCCR identified all patients for both cancers in the period 1998 to 2003. This data was then split into 2 data sets to allow for analysis of each of the cancers.
4. Each patient is only counted once in each year of data extracted.
5. Each person is assigned a 5-year age band based on their age at the end of their first admission in any one year.
6. Each person is assigned to the relevant Lower Super Output Area (LSOA) with relevant Deprivation and Geodemographic indicators also attached based on postcode of residence at the end of their first admission in any one-year, to allow for calculation of rates by each of the classifications.

b) Population Denominators
1. The population present is derived from mid-year estimates for Local Authorities in the North West Region for 1998 to 2002.
2. These are apportioned to LSOAs in accordance with the populations in the 5-year age and sex bands of the LSOA based on the 2001 Census Proportions.
3. The years are then summed to create a population denominator.

c) Calculation of Expected Number of Cases
1. The Wirral proportion of persons with the condition for each age and sex band is calculated by dividing the total number of persons admitted with the condition by the Wirral population totals for each age and sex band.
2. The population at Lower Super Output Area for the same age and sex band is multiplied by the appropriate age and sex specific proportion.
3. These figures are summed for each Lower Super Output area. For different gradient geographies and maps the numbers are summed to the appropriate levels, in accordance with the standard look-ups.

Calculation of Standardised Mortality Ratios

Standardised Mortality Ratios are calculated in a very similar way, except the actual numbers are extracted from the MCCR Data only. In the calculation of the SMRs using the cancer registry data all causes of death have been used for anybody registered with Cancer.

Calculation of Rates by Inequality-Identifying Gradients

a) Hospitalised Data

The charts within this report show directly age-standardised rates for each category in the classification. These rates were calculated by identifying number of cases by 5-year age band in each category, which is divided by the 5-year age band population for the same category. Age specific rates are then multiplied by the European Standard Population and summed to give the directly standardised rate per 100,000 people in the population.

b) Mortality Data

An identical method is used for Mortality data.

Calculation of Confidence Intervals for Rates

The 95% confidence intervals for the age-standardised rates were calculated using a normal approximation, modified to use the binomial variance for a proportion to estimate the variances of the crude age-specific rates.

Appendix 3 – Survival Analysis Methods and Results

Introduction

Cancer survival is dependant upon many factors, such as early diagnosis, appropriate treatment and patient or tumour response to treatment. It may be difficult to quantify these factors due to lack of data, but it is possible, using available information, to find which patients survive longest, suggest reasons why and apply this reasoning to groups with lower survival rates.

The study provides a comparison of survival of lung cancer and colorectal cancer (large bowel cancer) patients, within groups based upon gender, age and the Index of Multiple Deprivation (IMD) quintile. These factors are seen nationally to have an effect on survival (1) and results from a recent Cancer Awareness Study, involving response from questionnaires, showed differences between such groups with regard to knowledge of the signs and symptoms of cancer.

Methodology

Survival Analysis

Survival analysis is the analysis of data that correspond to the time from a well-defined time origin until the occurrence of some particular event or end-point.

Special Features of Survival Data
- i. Survival data is not usually symmetrically distributed – typically the data will be positively skewed, therefore do not assume that the population distribution is normal.
- ii. Censoring: Survival times are frequently censored i.e. the end-point of Interest has not been observed for an individual. This may be because the individuals are still alive or contact has been lost. For the Kaplan-Meier estimation censoring occurs after the last known survival time, this is called right censoring (left and interval also exist but are rarely used).

Patient Time and Study Time

Typically not all patients are diagnosed at exactly the same time but accrue over a period of time. The calendar time period of which an individual survives is known as the study time.

Survivor Function

The survival time of an individual, t can be regarded as the value of the random variable T that can take any non-negative value. Suppose that the probability density function for T is represented by f(t) then the cumulative distribution function is given by:

$$F(t) = P(T < t) = \int f(u)$$

This represents the probability that the survival time is less than a value t.

The survivor function S(t), is defined as the probability that the survival time is greater or equal to t.

$$S(t) = P(T \leq t) = 1 - F(t)$$

Kaplan-Meier Estimate of the Survivor Function

The Kaplan-Meier method gives a non-parametric estimation of the survivor function. The event of interest is the death of a cancer patient which has not occurred for all patients, therefore some of the data will be censored i.e. they are still alive. To incorporate the censored data into the study the Kaplan-Meier method of analysing survival is used (2).

For each patient individual survival times are calculated, here it is necessary to indicate any censored data. Next, a series of time intervals is formed, ignoring the censored data, such that one death is contained in each interval . The death time is taken to occur at the start of each interval.

It must be assumed that the events or deaths in the sample all occur independently of each other. Then the estimated survivor function at any time in any interval will be the estimated probability of surviving beyond that particular time interval. This gives the probability of the patient surviving though this interval and the intervals before it.

The Kaplan-Meier estimate of the survivor function is:

$$\hat{S}(t) = \sum_{j} \left\{ (n_j - d_j) \right\} / n_j$$

Where:

n = the number of individuals

t = observed survival times (some may be censored, some may be the same as others)

r = the number of death times (where $r \leq n$)

j = the jth death time (after the death times are arranged in ascending order, $j = 1,2,3…$)

This function is a step function (the graph resembles an uneven staircase).

To conduct this analysis, on large samples of data statistical software SPSS is used. The Log-Rank test statistic is used, where necessary to compare factors.

Interpretation of the Kaplan Meier Results

There are noticeable differences between descriptive statistics for conventional statistics and survival statistics. The colorectal cancer data provides an example to highlight these differences:

Conventional Descriptive Statistics

For the colorectal data SPSS provided the following information for the variable of Days Survived.

Descriptive Statistics for Days Survived

N	Valid	2121
	Missing	2135
Mean		2040.97
Std. Error of Mean		44.638
Median		1295.00
Mode		0
Std. Deviation		2055.789
Variance		4226269.136
Range		8746
Minimum		0
Maximum		8746

Survival Statistics
Using SPSS to perform a Kaplan-Meier survival analysis provided the statistics below:

Number of Cases: 2121   **Censored**: 1014   (47.81%) **Events**: 1107

Survival Time	**Standard Error**	**95% Confidence Interval**
Mean: 3868 (Limited to 8746)	92	(3687, 4048)
Median: 2979	190	(2607, 3351)

The number of patients in the population is the same (2,121); the maximum survival time is also the same for each (8,746). However the mean and median are very different, this reflects on the other statistics dependant on the averages.

The survival mean, 3,868 is not the arithmetic mean (2,040.97) it is the area under the survival curve for uncensored patients, i.e. the patients who have died.

Similarly, the survival median, 2,979 is not the same as the conventional median (1,295).   The survival median is interpreted as the survival time associated with the first patient to have a cumulative survival probability of ≤ 0.5, i.e. the time when 50% of the patients in that group have died, if this is not reached then the median is not calculated. Typically the median provides a more useful measure of the central location of the data as survival times are often skewed, this is shown in the histogram below, which shows the distribution of survival times for the colorectal cancer patients. Additionally the median is less influenced by outliers.

Applying the Kaplan-Meier Method to the Wirral Data

Mean = 2040.97
Std. Dev. = 2055.789
N = 2,121
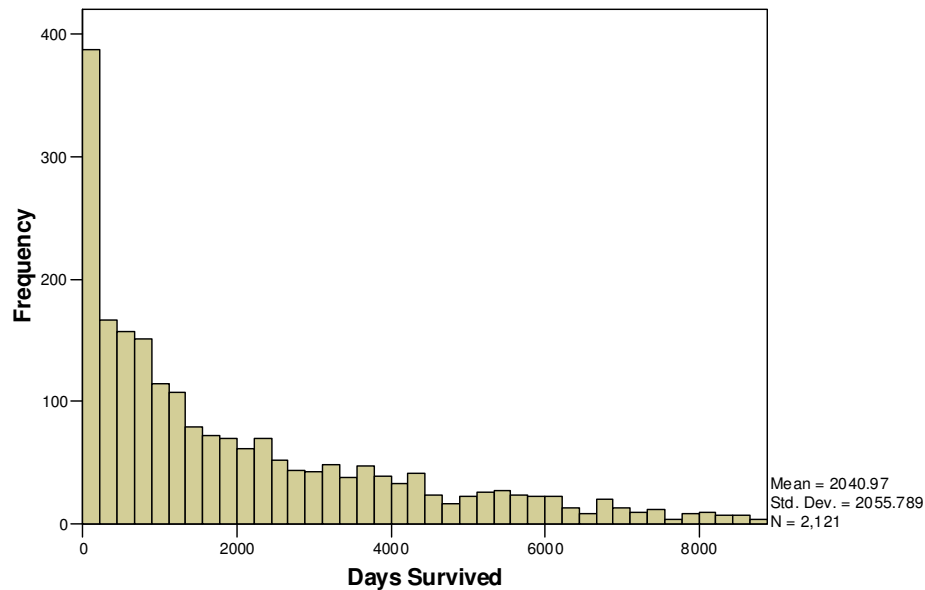
The data used in this study is provided by the Cancer Registry, using the most recent figures. The data is pooled from the two Wirral PCTs. The study does not include identification of individual patients.

The variables provided by the registry data, stored as an Access database, do not include the variables required for the Kaplan-Meier Analysis or the bespoke analysis required by the Health Equity Audit.   The variables available and listed below can be manipulated, using Excel to complete the necessary dataset.

> Patient sex (Male or Female)
> Cancer site code (1 = lung, 2 = colorectal)
> Patient date of birth
> Date of diagnosis
> Date of death
> Multiple deprivation quintile: (1, 2, 3, 4 or 5).

The variables required are:

For the Kaplan-Meier Method

Time period

Date of diagnosis to either the death of the patient or the date of censoring, however it is not possible to know how long the patient had the disease or symptoms of the disease before investigation or the time taken for referral.
The data used has the date of death or is blank, here it is assumed that the patient is still alive and the date 01/01/05 has been used as the end of study date. The time period is measured in days.

To calculate this length of time

For a patient who has died (event) this is calculated by :

Length of sickness = Date of death – Date of diagnosis.

For a patient who is censored and still alive

Length of sickness = Date of end of Study time – Date of diagnosis.

Censored Data Code

To perform the analysis in SPSS, a code is required to differentiate between an event a censored entry. Patients with a recorded death, i.e. the event is coded as 1. Censored data is coded 2.

For Comparison of Groups

By Age

This continuous variable has to be divided into two discrete groups.

Age Code: patient age $\leq$ 50 = 1
              patient age > 50 = 2

By Grouped Multiple Deprivation Quintile

Grouped Code1 :   1 and 2 = 1
                    3, 4 and 5 = 2

Grouped Code2:   1,2 and 3 = 1
                    4 and 5 = 2

<u>By Sex</u>

SPSS can manage strings as well numeric data so sex being "Male" or "Female" may be used. However for some comparisons it is necessary to code the variable.

Sex Code: Male = 1
              Female = 2

The complete dataset is now:

Patient sex: (Male or Female)
Sex Code: (1 or 2)
Cancer site; (Lung or Colorectal)
Multiple deprivation quintile: (1, 2, 3, 4 or 5)
Grouped Code1: (1 or 2)
Grouped Code2: (1 or 2)
Length of sickness: (continuous variable measured in days)

Censor Code: (1= death, 2 = censored (alive)).

The data can be transferred from Excel to SPSS and the Kaplan-Meier Analysis performed.

Colorectal Cancer Survival: Overall

No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
			Time	SE	95% CI	Time	SE	95% CI
2121	1107	1014(47.81%)	3868 (Limited to 8746)	92	(3687, 4048)	2979	190	(2607, 3351)

Colorectal Cancer Survival Function

Colorectal Cancer Survival: Comparison between Males and Females

H_0: There is no difference in survival time between male and female colorectal cancer patients.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
Sex	*Male*	1100	586	514 (46.73%)	3631 (Limited to 8614)	128	(3380, 3883)	2442	270	(1912, 2972)
	Female	1021	521	500 (48.97%)	4075 (Limited to 8746)	130	(3819, 4330)	3518	287	(2956, 4080)

	Statistic	Degrees of Freedom	Significance
Log Rank	5.54	1	0.0186

P < 0.05, reject H_0: there is evidence to suggest that there is a difference in survival time between male and female colorectal cancer patients.

Colorectal Cancer Survival: Kaplan-Meier Survival Graph: Comparison between Males and Females

Colorectal Cancer Survival Functions

Sex

— Males
— Females

Colorectal Cancer Survival: Comparison Index of Multiple Deprivation (IMD) Quintile

H_0: There is no difference in survival time between colorectal cancer patients according to IMD quintile.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
IDM Quintile	1	263	122	141 (53.61%)	4224 (Limited to 8636)	269	(3696, 4751)	4081	694	(2722, 5440)
	2	260	135	125 (48.08%)	3875 (Limited to 8614)	270	(3346, 4403)	2753	607	(1563, 3943)
	3	534	282	252(47.19%)	3692 (Limited to 8594)	181	(3337, 4047)	2480	360	(1775, 3185)
	4	321	190	131 (40.81%)	3663 (Limited to 8678)	214	(3242, 4083)	2872	559	(1777, 3967)
	5	737	374	363 (49.25%)	3902 (Limited to 8746)	159	(3590, 4215)	3119	320	(2492, 3746)

	Statistic	Degrees of Freedom	Significance
Log Rank	4.22	4	0.3772

P >0.05, accept H_0 there is no statistical evidence to suggest that there is a difference in survival time for colorectal cancer patients between quartiles of the Index of Multiple deprivation.

Colorectal Cancer Survival: Kaplan-Meier Survival Graph: Comparison Index of Multiple Deprivation (IMD) Quintile

Colorectal Cancer Survival Functions
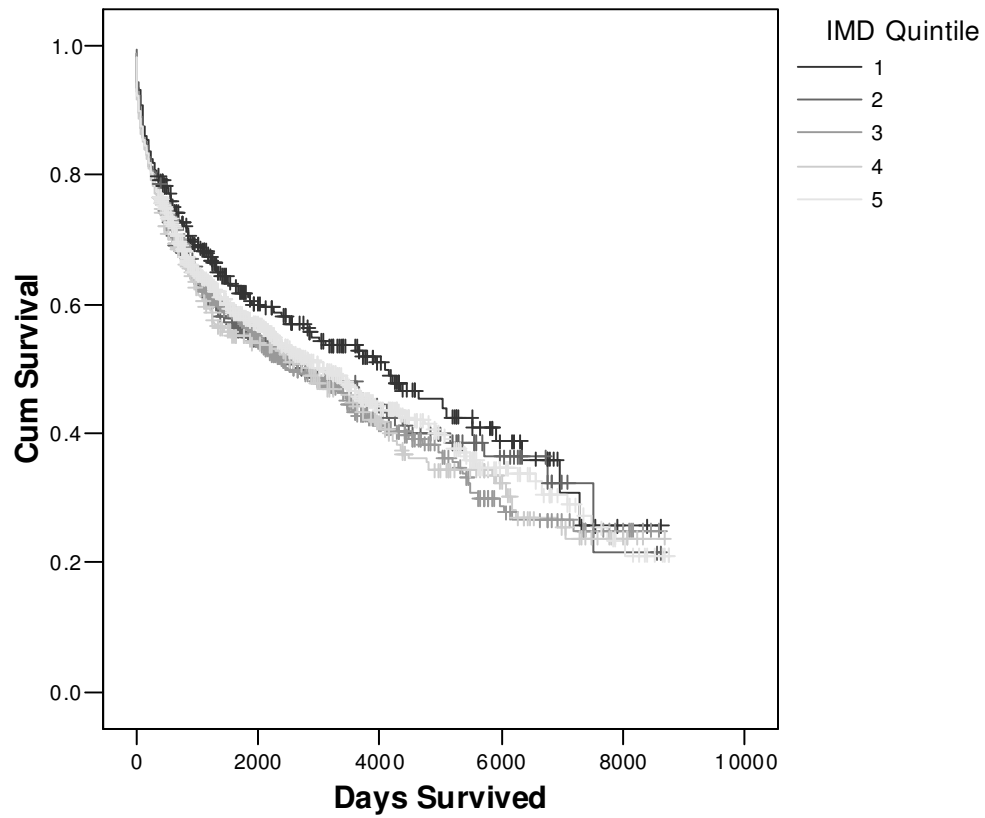
Colorectal Cancer Survival: Comparison between Age Groups ($\leq$ 50 years and > 50 years)

H_0: There is no difference in survival time between patients aged 50 or below and patients aged over 50.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
Age	$\leq$ 50	134	31	103 (76.87%)	6647 (Limited to 8739)	325	(6011, 7283)	Not calculated *	Not calculated *	Not calculated *
	> 50	1987	1076	911(45.85%)	3661 (Limited to 8746)	94	(3477, 3845)	2655	200	(2264, 3046)

* The survival median is interpreted as the survival time associated with the first patient to have a cumulative survival probability of $\leq$ 0.5, if this is not reached then the median is not calculated.

	Statistic	Degrees of Freedom	Significance
Log Rank	47.30	1	0.0000

$P < 0.05$, reject H_0, there is evidence to suggest that there is a difference in survival time between colorectal cancer patients aged $\leq$ 50 and those aged >50. No patients $\leq$ 50 years of age had a cumulative probability of less that 0.5.

Colorectal Cancer Survival: Kaplan-Meier Survival Graph: Comparison between Age Groups ($\leq$ 50 years and > 50 years)

Colorectal Cancer Survival Functions
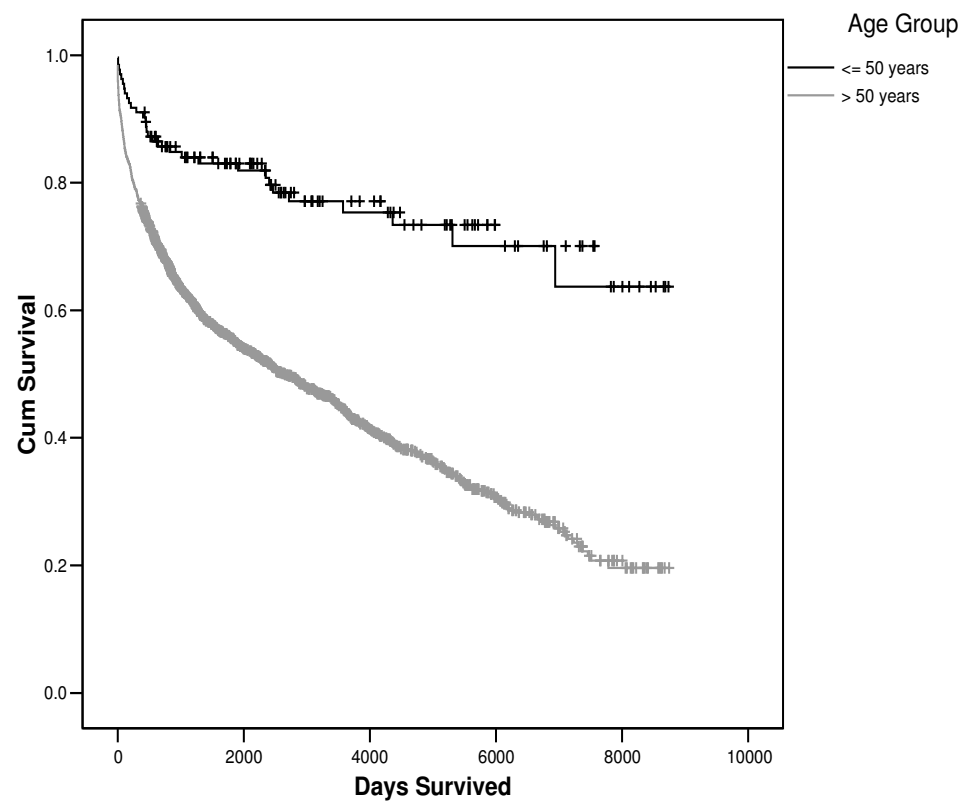
Lung Cancer Survival: Overall

No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
			Time	SE	95% CI	Time	SE	95% CI
2087	1779	308 (14.76%)	1292 (Limited to 8549)	62	(1171, 1413)	178	10	(158, 198)

Lung Cancer Survival Function
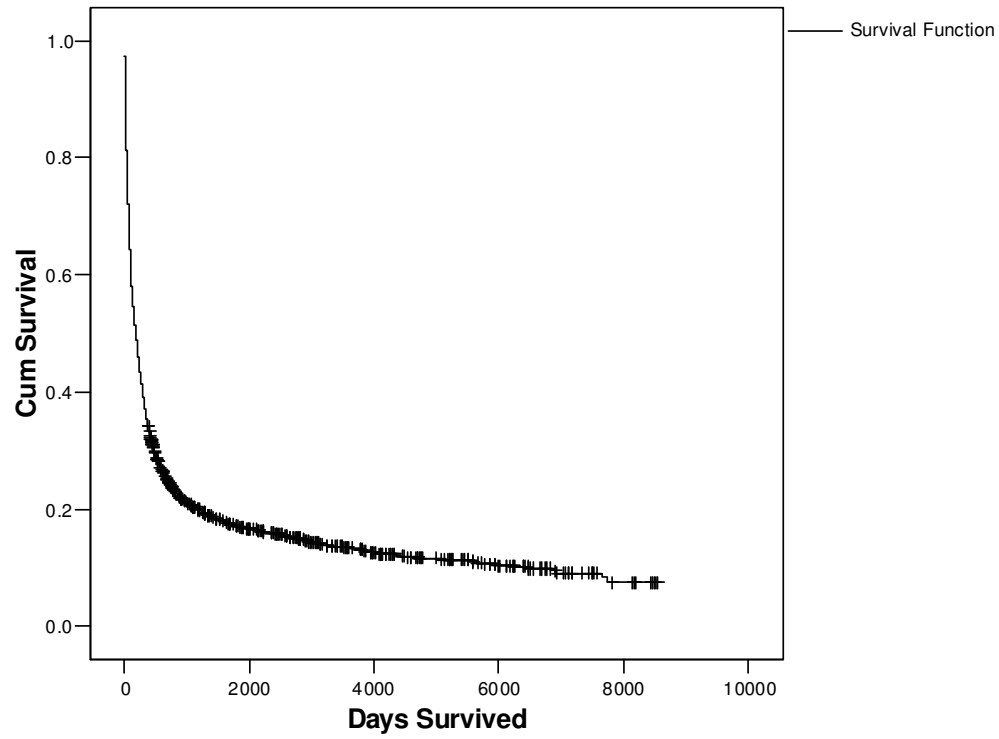
Lung Cancer Survival: Comparison between Males and Females

H_0: There is no difference in survival time between male and female lung cancer patients.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
Sex	*Male*	1199	1032	167 (13.93%)	1260 (Limited to 8494)	78	(1107, 1414)	167	13	(141,193)
	Female	888	747	141(15.88%)	1335 (Limited to 8549)	100	(1139, 1530)	188	16	(156, 220)

	Statistic	Degrees of Freedom	Significance
	0.37	1	0.5432

P > 0.05, therefore there is no evidence to suggest that there is a difference in survival time between male and female lung cancer patients.

Lung Cancer Survival: Kaplan-Meier Survival Graph: Comparison between Males and Females

Lung Cancer Survival Function

Lung Cancer Survival: Comparison Index of Multiple Deprivation (IMD) Quintile

H_0: There is no difference in survival time between lung cancer patients according to IMD quintile.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
IDM **Quintile**	*1*	130	109	21 (16.15%)	1226 (Limited to 7032)	206	(822, 1631)	201	56	(92, 310)
	2	198	162	36 (18.18%)	1372 (Limited to 7564)	195	(989, 1754)	204	34	(138, 270)
	3	458	377	81(17.69%)	1587 (Limited to 8549)	144	(1304,1869)	190	21	(149, 231)
	4	355	301	54 (15.21%)	1376 (Limited to 8494)	151	(1080, 1672)	219	30	(113, 277)
	5	945	829	116 (12.28%)	1079 (Limited to 8513)	84	(914, 1244)	141	14	(113, 169)

	Statistic	Degrees of Freedom	Significance
	13.83	4	0.0078

$P < 0.05$, therefore there is evidence to suggest that there is a difference in survival times between lung cancer patients stratified by IMD quintile.

Lung Cancer Survival: Kaplan-Meier Survival Graph: Comparison Index of Multiple Deprivation (IMD) Quintile

Lung Cancer Survival Function
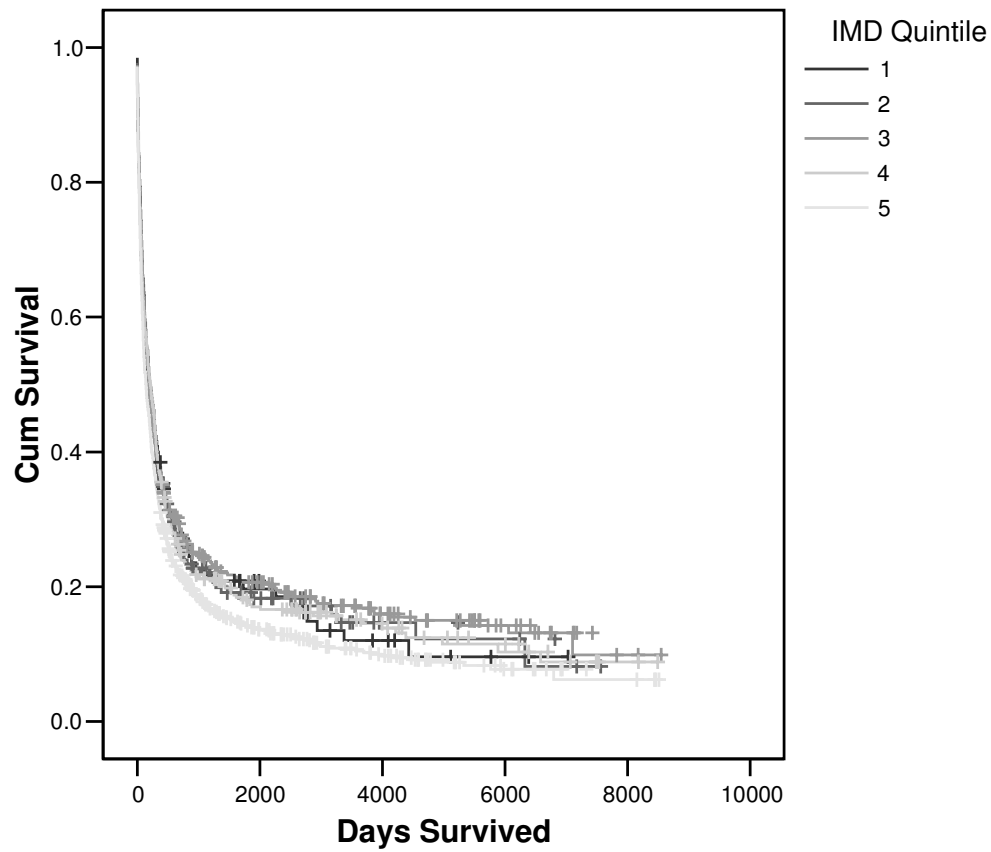
Lung Cancer Survival: Comparison between Age Groups ($\leq$ 50 years and > 50 years)

H_0: There is no difference in survival time between patients aged 50 or below and patients aged more than 50.

Factor		No of Cases	No of Events	No Censored (% Censored)	Mean Survival			Median Survival		
					Time	SE	95% CI	Time	SE	95% CI
Age Group	$\leq$ 50	98	66	32 (32.65%)	2933 (Limited to 8549)	393	(2163, 3703)	431	115	(206, 656)
	> 50	1989	1713	276 (13.88%)	1203 (Limited to 8513)	61	(1084, 1322)	167	10	(147, 187)

	Statistic	Degrees of Freedom	Significance
Log Rank	23.80	1	0.0000

P < 0.05, reject H_0, there is statistical evidence to suggest that there is a difference in survival time between lung cancer patients aged $\leq$ 50 and those aged >50.

Lung Cancer Survival: Kaplan-Meier Survival Graph: Comparison between Age Groups

Lung Cancer Survival Function
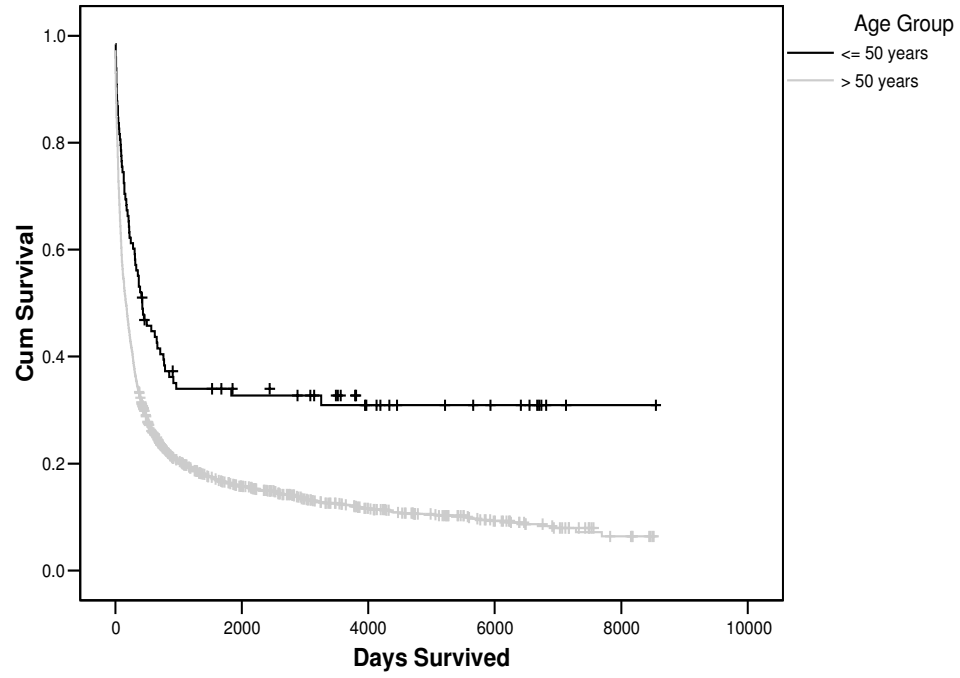
Probabilities of Surviving for 5 years

The study is done in days ∴ 365 x 5 = 1825 days.

There have been 2 leap years since the first patient diagnosis in 1998 so:

1825 + 2 = 1827 days = 5 years.

The probabilities are given in **bold** as proportion and percentages (in brackets).

The intervals (e.g. 1673-1836) contain the 1827 days (5 years) and all values within the interval including the end values have the same probability.

	All Patients	IMD Quintile					By Age		By Sex	
		1	2	3	4	5	≤50	>50	Male	Female
Colorectal	1827 **0.5728** (57.3%)	1673-1836 **0.6117** 61.2%	1786-1841 **0.5483** 54.9%	1801-1839 **0.5669** 56.7%	1827 **0.5433** 54.3%	1590-1730 **0.5851** 58.6%	1516-2308 **0.8194** 82%	1827 **0.5553** 55.5%	1827 **0.5379** 53.8%	1786-1836 **0.6080** 60.8%
Lung	(1816-1840) **0.1706** (17.1%)	1443-2015 **0.1968** 19.7%	1423-1880 **0.1823** 18.3%	1816-2109 **0.2036** 20.4%	1802-1866 **0.1734** 17.3%	1757-1840 **0.1412** 14.1%	1002-2664 **0.3272** 32.7%	1816-1840 **0.1618** 16.2%	1802-1840 **0.1726** 17.35%	1816-1879 **0.1682** 16.8%

Appendix 4 – Cancer Awareness Questionnaire Results

186 people, who were all accessing Wirral Lifestyle and Weight Management Services, completed the Cancer Awareness Questionnaire.

Respondents were asked for their gender, age, postcode, ethnicity, education, personal contact with illnesses and disease and nine cancer awareness questions. The following results show the numbers of people getting each question correct and the full data used in the analysis.

Question 1
How many people in the UK will get cancer at some point in their life?
A   10%
B   25%
C   35% - Correct

112 respondents answered question 1 correctly.

Question 2
How many cancers could Britons adopting a healthy lifestyle prevent?
A   Half of all cancers - Correct
B   10 – 20% of all cancers
C   None

107 respondents answered question 2 correctly

Question 3
How many people in the UK die from cancer each year as a result of smoking?
A   12,000
B   42,000 - Correct
C   100,000

95 respondents answered question 3 correctly

Question 4
What is thought to be the most important lifestyle cause of cancer in non-smokers?
A   Living near power lines
B   Being overweight or obese - Correct
C   Stress

136 respondents answered question 4 correctly

Question 5
What proportion of adults in the UK are overweight or obese?
A   One in three - Correct
B   One in ten
C   Three in five

105 respondents answered question 5 correctly

Question 6
As part of eating healthily we are recommended to eat five portions of fruit and vegetables every day, what is the average number eaten in Britain?
A   Five
B   Three – Correct
C   One

88 respondents answered question 6 correctly

Question 7
What is the recommended amount of physical activity per week for good health?
A   30 minutes of moderate activity at least five times a week - Correct
B   20 minutes of vigorous exercise three times a week
C   60 minutes of vigorous exercise at least once a week

131 respondents answered question 7 correctly.

Question 8
In addition to covering yourself up and staying in the shade the SunSmart programme recommends that in hot weather you should use sunscreen, should you?
A   Start with SPF15 and as your skin gets browner progress to lower factors
B   Use SPF15+ and reapply regularly - Correct
C   Not worry too much as once your skin has burnt once it's protected

160 respondents answered question 8 correctly

Question 9
What new national cancer screening program will be introduced in the UK in the next two years?
A   Ovarian cancer
B   Lung cancer
C   Bowel cancer – Correct

108 respondents answered question 9 correctly.

The following tables are the full data tables as used in the analysis and show how many people got 0-9 questions correct.

		0	1	2	3	4	5	6	7	8	9	
Disease Group	Had Cancer	0	1	0	1	1	3	5	3	0	0	**14**
	Had Disease	0	0	3	2	9	6	12	6	4	1	**43**
	Contact Cancer	0	1	0	4	4	20	18	8	7	1	**63**
	Contact Disease	0	0	1	1	3	8	7	6	8	0	**34**
	None	1	0	0	2	7	8	6	3	4	1	**32**

		1	2	4	10	24	45	48	26	23	3	186

		0	1	2	3	4	5	6	7	8	9	
Academic Group	NVQ's	0	0	0	0	2	0	5	3	1	0	**11**
	Degree	0	0	0	0	1	2	2	2	2	0	**9**
	O' & 'A' Levels	0	1	2	1	3	7	11	9	7	1	**42**
	Other	0	0	0	3	2	8	3	1	2	0	**19**
	None	1	1	2	6	16	28	27	11	11	2	**105**
		1	**2**	**4**	**10**	**24**	**45**	**48**	**26**	**23**	**3**	**186**

		0	1	2	3	4	5	6	7	8	9	
Deprivation Quintile	Least	0	0	0	0	1	3	2	3	1	0	**10**
	Fourth	0	0	0	0	1	5	3	2	4	0	**15**
	Third	0	0	1	3	3	11	13	7	2	1	**41**
	Second	0	0	1	1	1	8	8	5	6	0	**30**
	Most	1	2	1	6	15	12	16	8	6	1	**68**
		1	**2**	**3**	**10**	**21**	**39**	**42**	**25**	**19**	**2**	**164**

		0	1	2	3	4	5	6	7	8	9	
P&P (P^2)	Mature Oaks	0	0	0	0	1	4	1	3	3	0	**12**
	Blossoming Families	0	0	0	0	1	3	2	3	2	0	**11**
	Country Orchards	0	0	0	0	0	0	0	0	0	0	**0**
	Rooted Households	0	0	0	1	2	9	9	4	2	1	**28**
	Senior Neighbourhoods	1	0	1	0	1	2	8	2	1	0	**16**
	Qualified Metropolitans	0	0	0	0	0	0	0	0	0	0	**0**
	Suburban Stability	0	0	1	4	3	7	7	7	4	0	**33**
	New Starters	0	0	0	0	0	0	0	1	0	0	**1**
	Urban Producers	0	0	1	0	4	3	5	1	3	0	**17**
	Weathered Communities	0	2	0	4	6	9	7	2	1	1	**32**
	Multicultural Centres	0	0	0	0	0	0	0	0	0	0	**0**
	Disadvantaged Households	0	0	0	1	3	2	3	2	2	0	**13**
	Urban Challenge	0	0	0	0	0	0	0	0	1	0	**1**
		1	**2**	**3**	**10**	**21**	**39**	**42**	**25**	**19**	**2**	**164**

		0	1	2	3	4	5	6	7	8	9	
Age Bands	0-39	0	0	1	1	5	4	7	8	6	0	**32**
	40-49	0	0	0	2	5	7	9	4	4	0	**31**
	50-59	0	0	1	2	2	19	16	5	5	2	**52**
	60-69	0	1	0	2	6	12	9	9	8	0	**47**
	70+	1	1	2	3	6	3	7	0	0	1	**24**
		1	**2**	**4**	**10**	**24**	**45**	**48**	**26**	**23**	**3**	**186**

		0	1	2	3	4	5	6	7	8	9	
Gender	Male	0	1	1	7	8	11	15	9	10	1	**63**
	Female	1	1	2	3	14	31	33	16	12	2	**115**
	Unknown	0	0	1	0	2	3	0	1	1	0	**8**
		1	**2**	**4**	**10**	**24**	**45**	**48**	**26**	**23**	**3**	**186**