NHS Wirral

Chronic Obstructive Pulmonary Disease

Health Equity Audit

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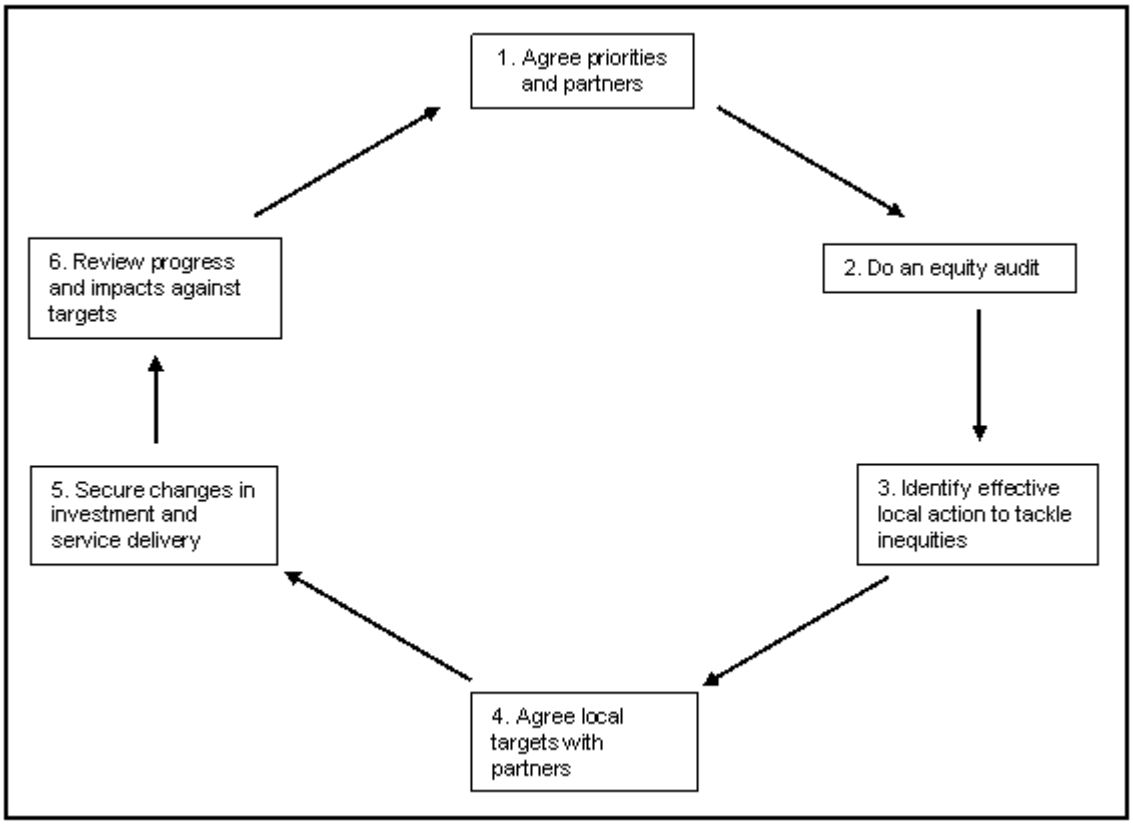
1. Introduction

1.1 What is a Health Equity Audit?

Health Equity Audits (HEA) focus on how fairly resources are distributed in relation to the health needs of different areas or groups. The aim is not to distribute resources equally, but to ensure they are allocated in relation to health need. This is vital, as failure to take into account health need could mean we contribute to increasing health inequalities instead of reducing them.

Health Equity Audit Cycle



. Source: DH (2003)

This report aims to provide an equity profile (part 2 of the equity audit process) for COPD in Wirral.

1.2 Background of Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease (COPD) is a life-threatening lung disease that interferes with normal breathing. The main symptoms of COPD are breathlessness, abnormal sputum and a chronic cough with daily activities such as walking up a short flight of stairs or carrying a box becoming very difficult as the condition gradually worsens.

The World Health Organisation (WHO) estimated that “210 million people have COPD worldwide…….. (and) more than 3 million people died of COPD in 2005, 5% of all deaths globally that year” (WHO 2008). The disease now affects both men and women almost equally, due to an increase tobacco use among women and a higher risk to indoor air pollution (i.e. solid fuel used for cooking and heating). Total deaths from COPD are “projected to increase by more than 30% in the next 10 years unless action is taken to reduce the underlying risk factors. COPD is not curable but smoking cessation and treatment can slow the progress of the disease.

2. Method

2.1 Data sources

Anonymised data was collected from GP practice systems in Wirral for people who had been diagnosed with COPD. This also included information about patient demographics (age and sex), their area of residence (postcode and GP details) and clinical data related to COPD. Ten GP practice did not take part in the audit.

Data was also collected from external data sources for example the Quality and Outcomes Framework, Secondary Use Service, Merseyside Fire and Rescue Service, Dr Foster Intelligence and the NHS Information Centre.

2.2 Statistcal Analysis

The data collected allowed a profile to be built of Wirral patients who had been diagnosed with COPD and whether access to health services and other factors are equitable. The analysis has been adjusted for the ten practice that did not take part in this audit.

2.2.1 MOSAIC Profiling

Mosaic Public Sector Tool enables the public sector to understand citizens and communities in a consistent manner and drive targeted policy, resource and communications activity.

MOSAIC is a geo-demographic population classification tool produced for the public sector. It is used to segment the population according to the type of neighbourhood in which the population live and is constructed from a range of data sources including the Census, consumer behaviour and lifestyle factors. It is a useful tool for gaining more in-depth insight into the behaviour and beliefs of the population or certain groups of the population. Mosaic Public Sector segments the population into 11 Groups and 61 Types, based on their postcode. The main groups are listed below:

<u>Mosaic Public Sector Group Descriptions</u>

- A Career professionals living in sought after locations
- B Younger families living in newer homes
- C Older families living in suburbia
- D Close knit, inner city and manufacturing town communities
- E Educated, young single people living in areas of transient populations
- F People living in social housing with uncertain employment in areas of deprivation
- G Low income families living in estate based social housing

- H Upwardly mobile families living in homes bought from social landlords
- I Older people living in social housing with high care needs
- J Independent older people with relatively active lifestyles
- K People living in rural areas far from urbanisation

Mosaic groups are matched with COPD patients using the postcode of usual residence of each COPD patient.

2.2.2 Correlation Coefficient

Correlation coefficient was calculated to measure the association between independent variables e.g. deprivation scores and diagnosed COPD prevalence.

2.2.3 Statistical Process Control (SPC)

SPC charts were used to determine whether there were statistical outliers when comparing GP data for hospital admissions.

2.2.4 Index of Multiple Deprivation

The Index of Multiple Deprivation (IMD) 2007 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each lower super output area (LSOA) in England. This allows different areas to be ranked relative to one another according to their level of deprivation.

Data was grouped into deprivation quintiles to compare the variations in health between deprived and affluent sections of the population regardless of where they live in Wirral.

The postcode of each patient was matched with the Ordinance Survey postcode address file to obtain the LSOA and provide an individuals deprivation ranking.

2.2.5 The Quality and Outcomes Framework (QOF)

The Quality and Outcomes Framework (QOF) is an annual reward and incentive programme for all GP surgeries in England, detailing practice achievement results. Performance and prevalence data from QoF was analysed to compare GP performance for COPD patients.

2.2.6 Standardised Admission and Mortality (SAR / SMR)

To compare areas with different age and sex profiles admissions and mortality data were age standardised.

3. Results

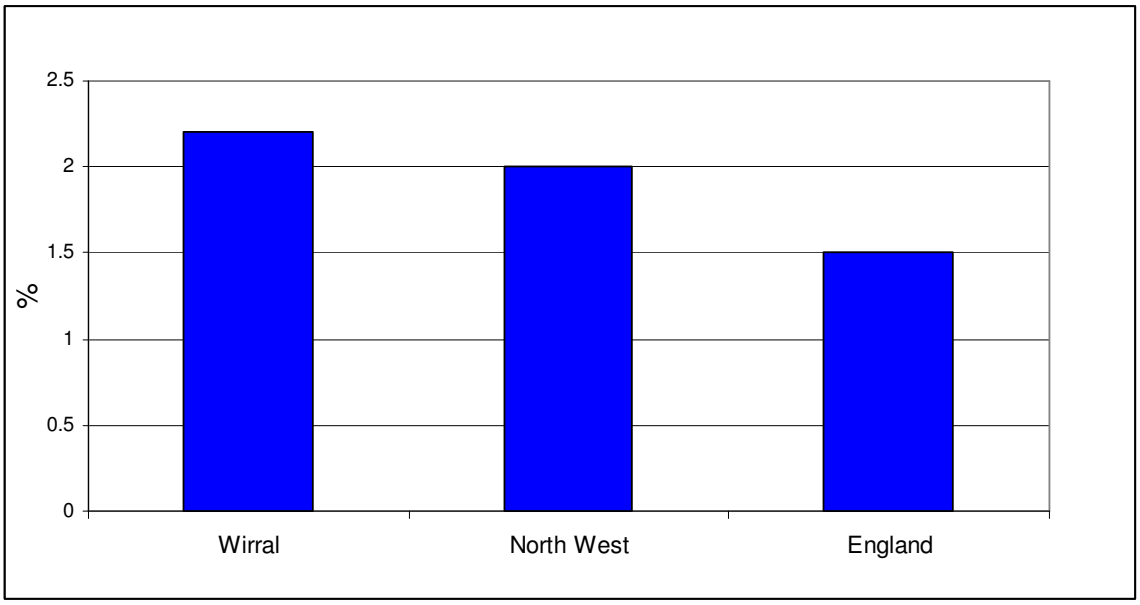
3.1 Prevalence of COPD

Evidence shows that there is a large undiagnosed population of COPD patients in the general population (Nacul et al., 2007). Early recognition of COPD symptoms is important for prevention and prognosis of the disease. This section will investigate the inequalities in diagnosed prevalence and undiagnosed prevalence of COPD at different geographical levels, social categories and organisational levels (GP practices) within Wirral.

3.1.1 Diagnosed prevalence of COPD in Wirral

The diagnosed prevalence of COPD is defined as patients who have received a diagnosis of COPD and recorded within GP clinical systems. In Wirral there are currently about 7,000 people with a diagnosis of COPD (QOF, 2009). The diagnosed prevalence in Wirral was 2.2%, compared to 2.0% and 1.5% in the North West and England respectively (Figure 3.1)

Figure 3.1 – Diagnosed Prevalence of COPD in Wirral, North West and England, 2008/09



Source: The NHS Information Centre, 2008/09

3.1.2 Variations in diagnosed prevalence and age and sex

Diagnosed prevalence of COPD increases with increasing age and the prevalence is higher in men than in women (Table 3.1).

Table 3.1 - Diagnosed prevalence of COPD by age and sex, Wirral, 2009

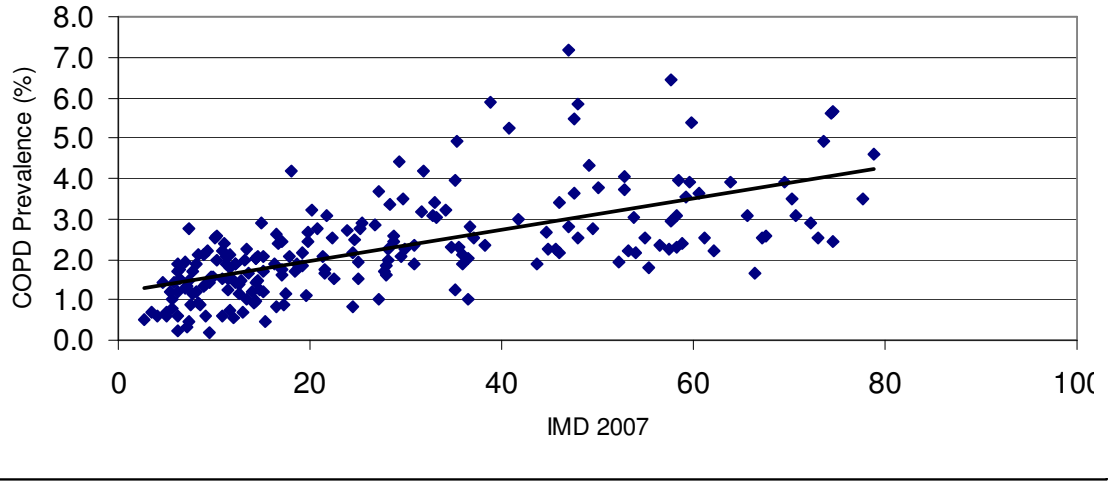
Age band (years)	Women		Men	
	Number	Prevalence	Number	Prevalence
below 40	38	0.1	48	0.1
40-49	174	0.7	149	0.7
50-59	466	2.2	424	2.2
60-69	982	5.3	1026	6.0
70-79	1127	7.8	1082	9.7
80+	863	7.8	640	11.4

Source: GP Clinical Systems, October 2009

3.1.3 Variations in diagnosed prevalence and Deprivation

There is a strong positive correlation between COPD prevalence and deprivation as measured by the Index of Multiple Deprivation (r = 0.64). Figure 3.2 illustrates the correlation between COPD prevalence and IMD 2007 for all lower super output areas (LSOA) in Wirral.

Figure 3.2 – Correlation between diagnosed prevalence of COPD and Deprivation



Source: GP Clinical Systems, October 2009 and IMD 2007

3.1.4 Variations in diagnosed prevalence of COPD and deprivation quintiles

The link can be further highlighted by comparing the diagnosed COPD prevalence in each deprivation quintile (Table 3.2). The prevalence in the most

deprived quintile of deprivation is more than twice the prevalence in the least deprived quintile.

Table 3.2 - Diagnosed prevalence and Deprivation Quintile (IMD2007)

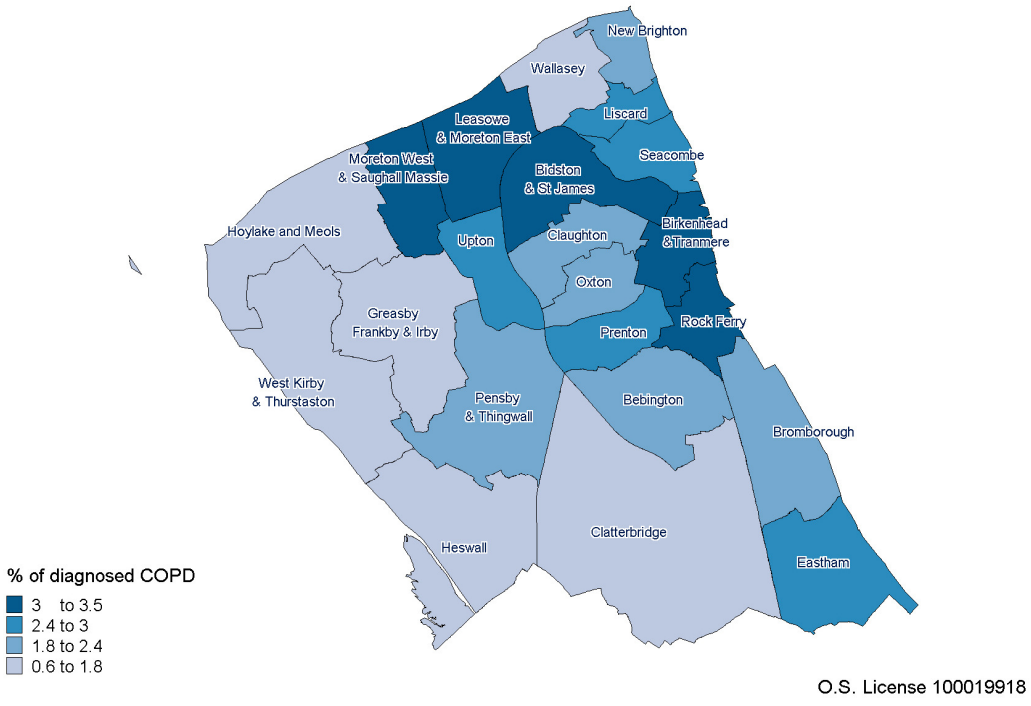
IMD Quintile	Number	Prevalence (%)	95% Confidence Interval	
			Lower	Upper
1	3188	3.2%	3.1	3.3
2	1374	2.6%	2.5	2.8
3	975	2.1%	2.0	2.2
4	911	1.7%	1.6	1.8
5	495	1.4%	1.2	1.5

Source: GP Clinical Systems, October 2009 and IMD 2007

3.1.5 Variations in diagnosed prevalence and geographical wards

There are large variations in diagnosed prevalence across Wirral population (Map 3.1). The prevalence in Heswall ward was 1.1% compared to 3.0% in Bidston and St James ward (See Appendix 1).

Map 3.1 – Diagnosed prevalence of COPD and Wirral wards, 2009



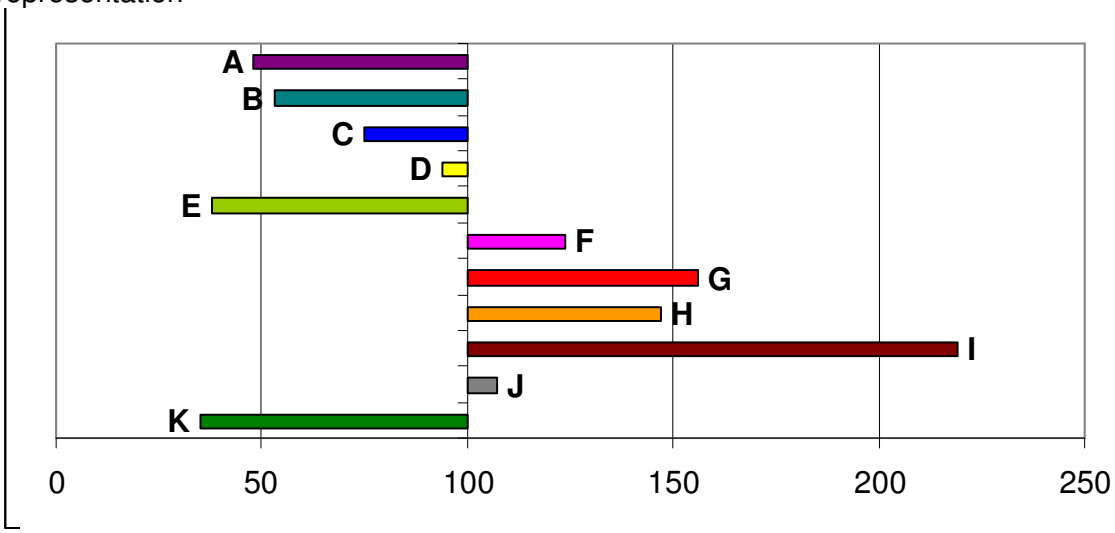
Source: GP Clinical Systems, October 2009

3.1.6 Diagnosed prevalence of COPD and Mosaic Groups

Figure 1 illustrates an index that compares the actual number of diagnosed COPD patients for each Mosaic groups with the expected number based upon the whole Wirral population. If the number of COPD patients in each group were identical to the Wirral average, the groups would all rank 100 or very close to it. Where a group ranks below 100, the prevalence is less than the Wirral average, whereas when they rank above 100, the prevalence of COPD is more than the Wirral average.

The largest over representations of diagnosed COPD were in groups, G, H and I. It is not surprising that Group I is a dominant category as they are characterised by an older population with greater health care needs. However Group G and H are generally younger and middle aged people but tend to be low income families with poor health needs.

Figure 3.3 - Proportion of Diagnosed COPD Patients by Mosaic Groups under/over representation



Source - GP Clinical Systems, October 2009 and Mosaic Public Sector

The main characteristics for these three mosaic groups are shown in the Appendix.

3.1.7 Severity of diagnosed COPD

It was not possible to calculate the severity of diagnosed COPD patients because of data quality issues within primary care clinical systems.

3.2 COPD recording of Ethnicity status

Ethnicity recording in general practices for patients diagnosed with COPD is not good. Fifty three percent of patients with a diagnosis of COPD had an unknown ethnicity status.

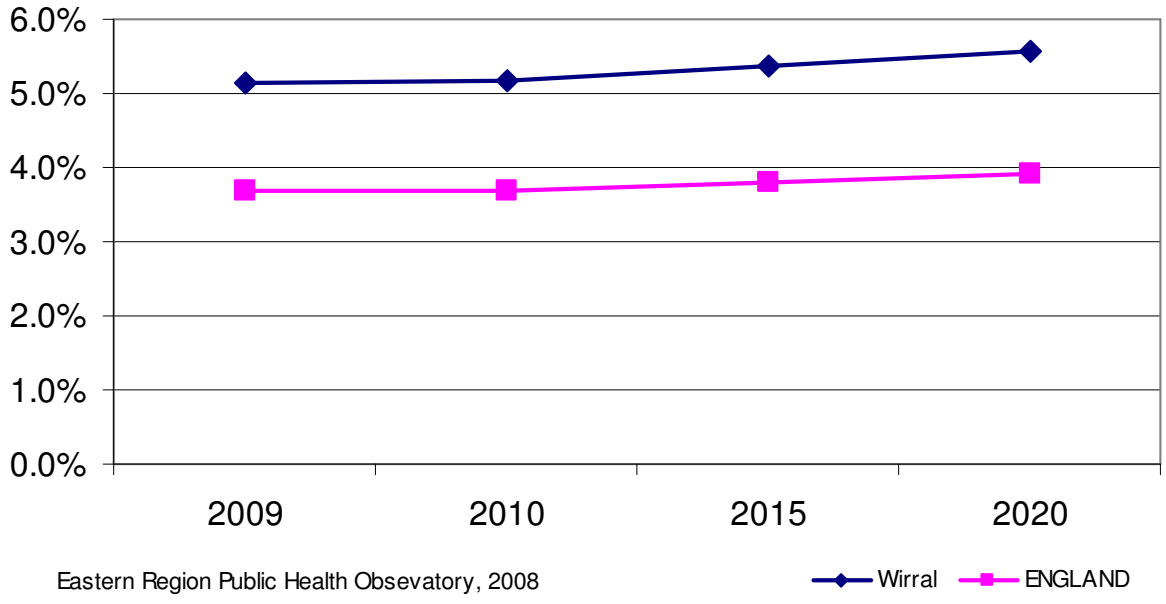
3.3 Modelled prevalence of COPD

In the last 20 years only two national studies have measured airways function in the UK (Cox, 1987; HSfE, 2002). The first reported that 10% and 11% of men and women aged 18-65 years respectively had abnormally low FEV_1 (Cox, 1987). The latest study, the Health Survey for England in 2001 measured the lung function of about 11,000 nationally representative individuals using a 'portable spirometer' (HSfE, 2002). Modelled prevalence estimates have been calculated from this survey to determine the total number of people with clinical symptoms of COPD in the adult population (Nacul et al., 2007). Using this model shows that:

- about 4.0% or 13,275 of the population will have COPD in Wirral;
- the prevalence in Wirral is higher than the national average, which is 2.6% of the total population;
- the prevalence is 6.2% in men and 4.4% in women aged 15 years and over and increases as age increases;

Due to the ageing population the prevalence of COPD (16 years and over) is expected to increase from _5.1% (12,949) in 2009 to _5.6% (14,084) in 2020. However, risk factor reductions (reduced smoking prevalence) may arrest this increase.

Figure 3.4 - Estimated Future Prevalence of COPD for all persons aged 16+



Source – Eastern Region Public Health Observatory, 2008

Most of the differences in prevalence of COPD is due to the older age profile of the population in Wirral compared to England.

3.4 Undiagnosed Prevalence

Using the modelled prevalence of COPD it is estimated that about 6,000 cases of COPD are currently undiagnosed in the Wirral population.

3.4.1 Prevalence of COPD by Locality

Birkenhead Locality has the highest prevalence of diagnosed COPD patients in Wirral (table 3.3)

Table 3.3 – Diagnosed and modelled COPD prevalence and locality, 2009

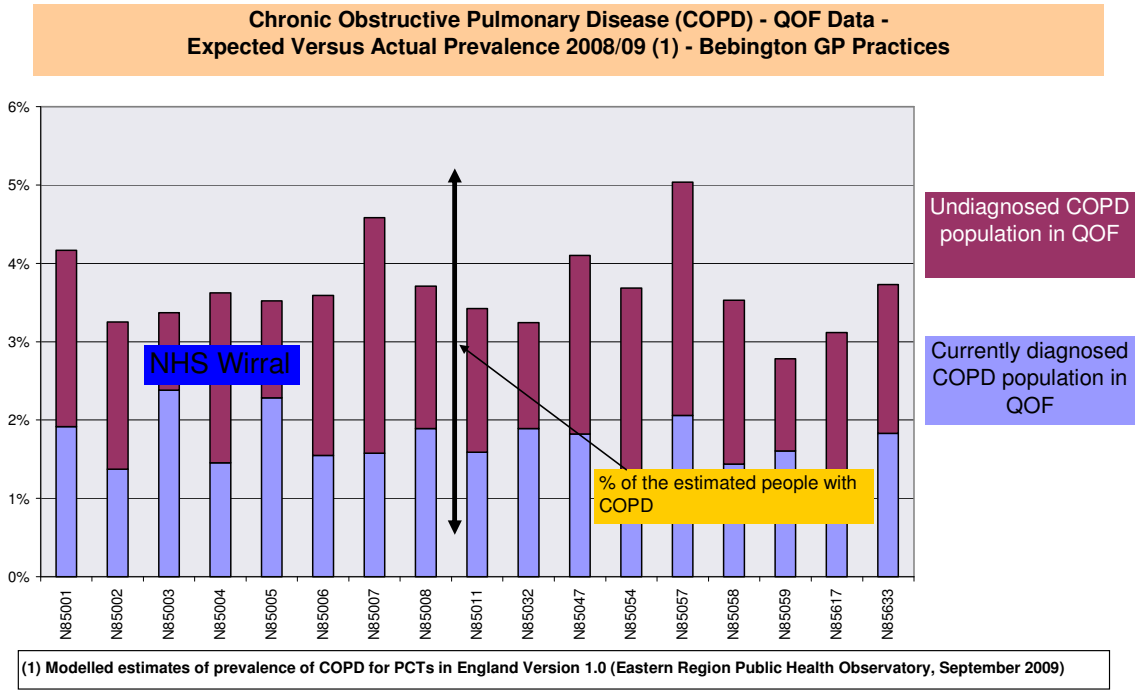
Locality	Diagnosed		Modelled	
	Number of cases	Prevalence (%)	Number of cases	Prevalence (%)
Bebington	1916	1.8	3978	3.7
Birkenhead	3939	2.6	6764	4.4
Wallasey	1824	2.5	3140	4.4

Source – QOF 2008/09

3.4.2 Diagnosed and modelled prevalence of COPD and GP practices

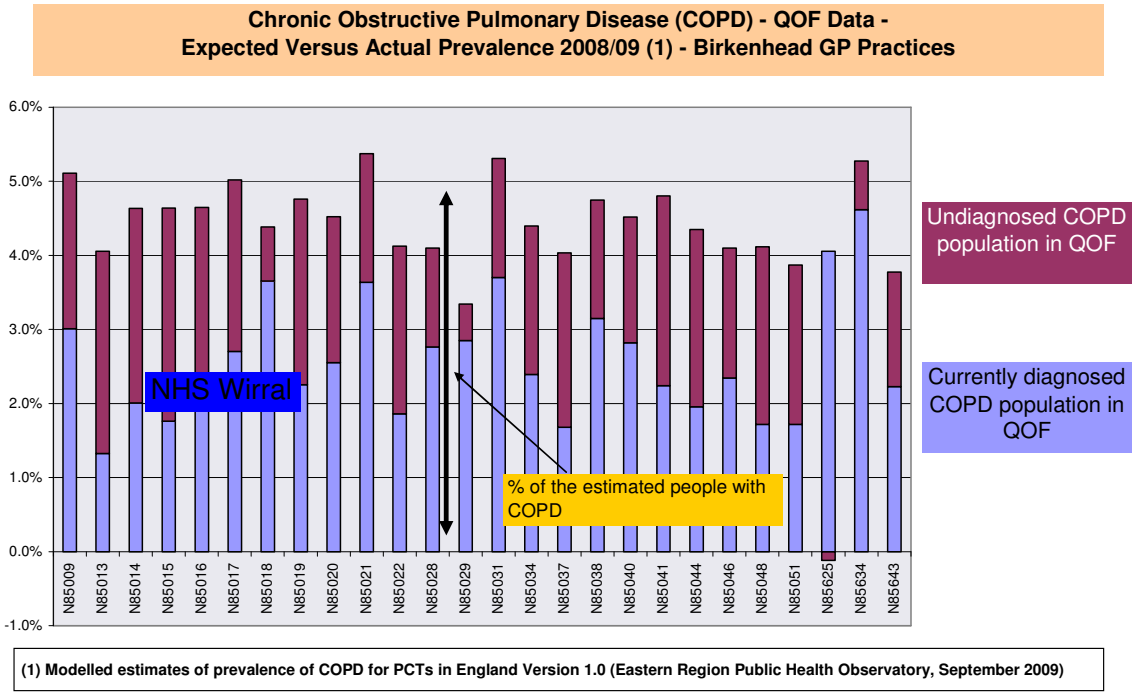
Comparisons between diagnosed and modelled prevalence of COPD in GP practices are shown in Figures 3.5 to 3.7

Figure 3.5 - ,Diagnosed and modelled COPD prevalence, Bebington Locality



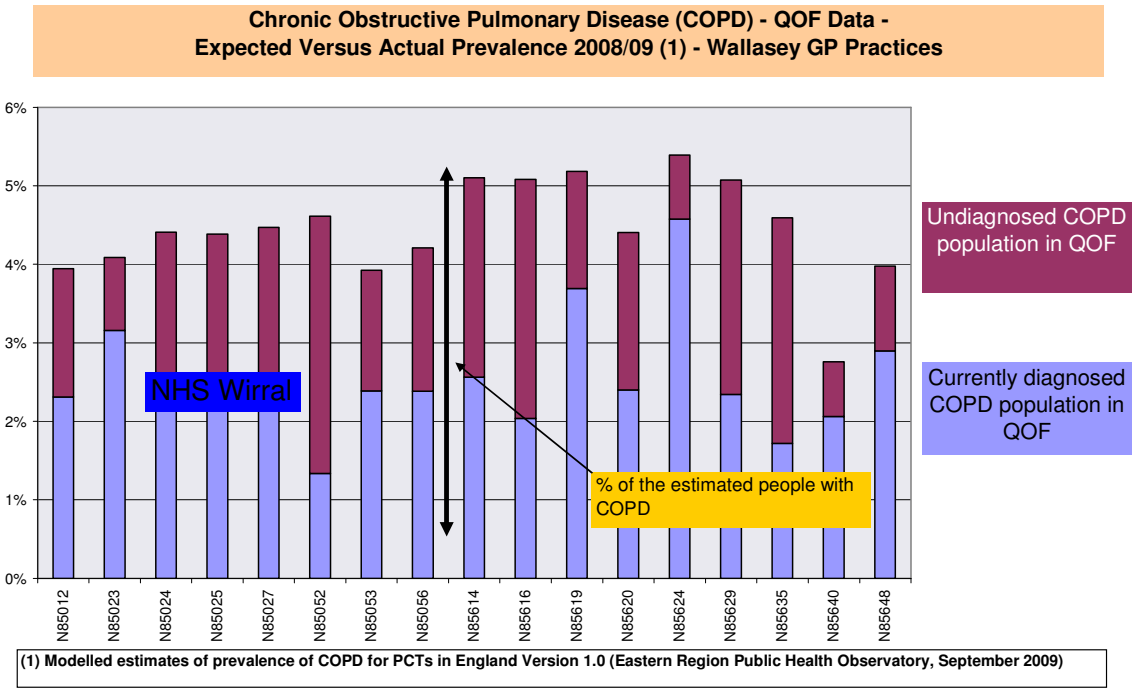
Source – Quality and Outcomes Framework (QOF), 2008/09 and Nacul et al., 2007

Figure 3.6 - ,Diagnosed and modelled COPD prevalence – Birkenhead Locality



Source – Quality and Outcomes Framework (QOF), 2008/09 and Nacul et al., 2007

Figure 3.7 - ,Diagnosed and modelled COPD prevalence – Wallasey Locality



Source – Quality and Outcomes Framework (QOF), 2008/09 and Nacul et al., 2007

Nearly all GPs have a larger modelled prevalence compared with the diagnosed prevalence of COPD. The codes on the charts represent the national GP practice codes.

Why is COPD undiagnosed?
In its early stages COPD is sometimes missed, as COPD patients learn to limit their physicial activities to escape the gradually emerging dyspnoea on exertion. One recent study found undiagnosed airflow obstruction to be more common than physician-diagnosed COPD and asthma combined. Although it is generally agreed that spirometry is essential for confirmation of COPD diagnosis, it is not always routinely used for early detection of the condition in at-risk patients seen in community practice (van Schayck et al, 2003).

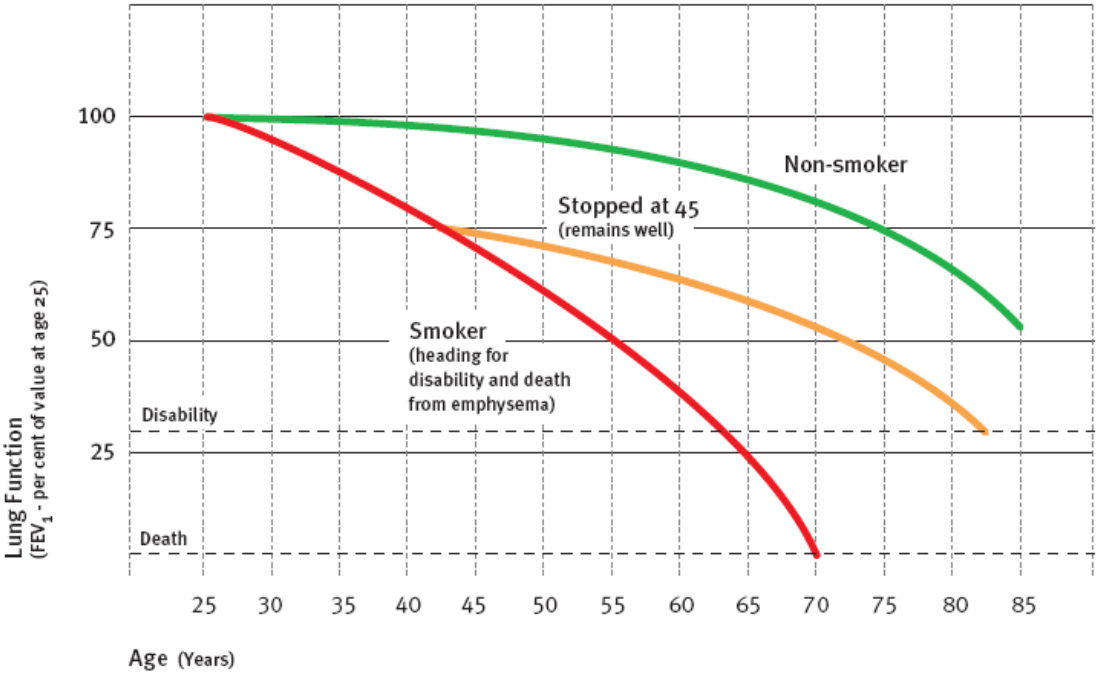
4. Risk Factors for COPD

The main causes and risk factors for COPD include smoking, deprivation, age, sex, occupational and environmental pollution and genetic. This section will investigate the inequalities in diagnosed prevalence and undiagnosed prevalence of COPD at different geographical levels, social categories and organisational levels (GP practices) within Wirral.

4.1 Smoking

Smoking is the leading cause of COPD. Not all people who smoke will develop COPD but over 95% of people who do go on to develop COPD will be smokers. (Schayk et al, 2002). The likelihood of developing the condition increases the more that you smoke and the longer you have been smoking. The reduction in lung function is gradual. A susceptible smoker who stops smoking will not recover lost lung function but the subsequent rate of loss will revert to normal. (Figure 4.1).

Figure 4.1 – Fletcher Peto curve showing the effect of smoking continuation or discontinuation on the decrease in Forced Expiratory Volume at one second over time



Source: Fletcher C, Peto R. (1977). The natural history of chronic airflow obstruction. *BMJ*;**1**:1645-8.

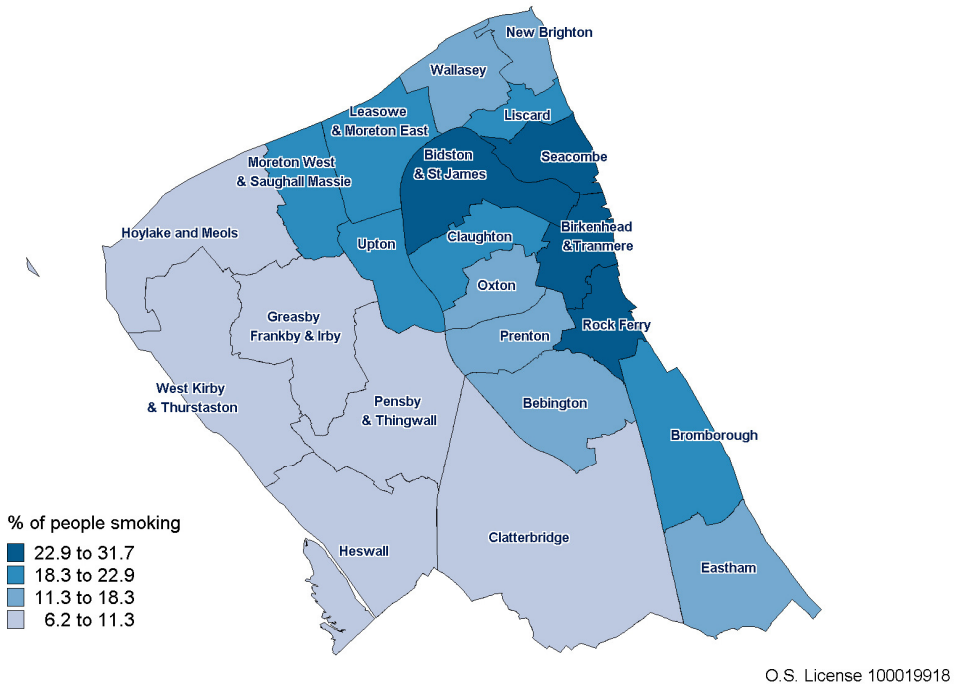
4.1.1 Smoking Prevalence in Wirral (also see Wirral Public Health Annual Report 2010)

The current smoking prevalence in for men and women in England is 22% and 19% (NHS Information Centre, 2009). Smoking prevalence data is only an estimate, and there are quite a few sources of data available for Wirral. Modelled prevalence estimates suggest that 23% of the Wirral population are current smokers (Information Centre, 2008). The true prevalence of smoking in Wirral is probably similar or slightly higher than the national average but large variations exist across Wirral.

4.1.2 Smoking Prevalence and Deprivation

There is a strong association between smoking prevalence and deprivation in Wirral. For example, data from the Merseyside Fire service home safety checks showed that the prevalence in Birkenhead was 5 times higher than the prevalence in Heswall (Map 4.1).

Map 4.1 - Smoking Prevalence from Merseyside Fire and Rescue Service

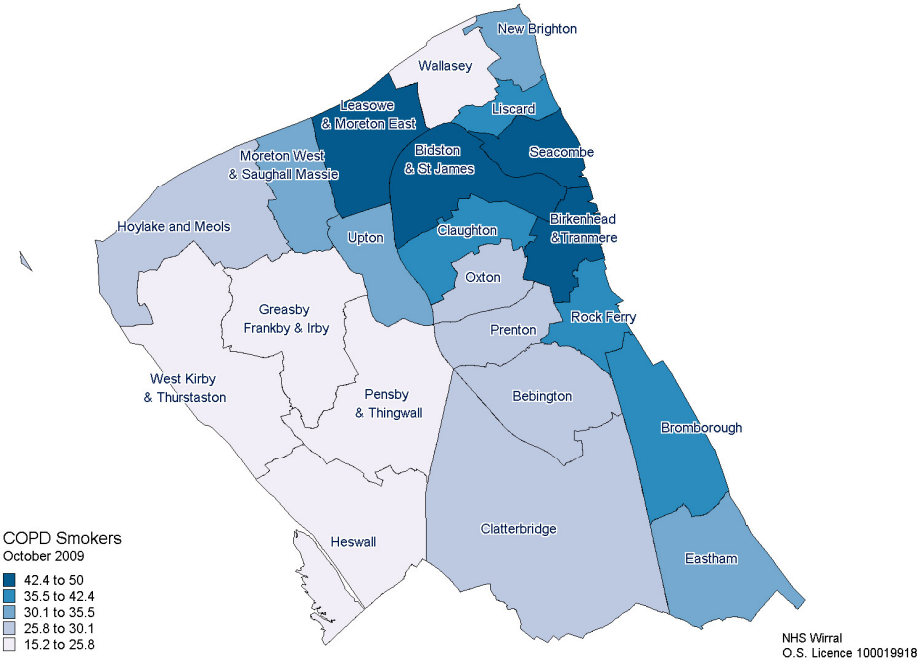


Source – Merseyside Fire and Rescue Service, 2008

4.1.3 Diagnosed COPD patients and smoking status

About 2409 (or 34%) patient with diagnosed COPD in Wirral are current smokers. Forty five percent are ex-smokers and about 20% have never smoked. The prevalence of current smoking varies from 15% in Heswall ward to 50% in Bidston and St James ward (Map 4.2).

Map 4.2 - COPD smoker with current smoking status



Source – GP Clinical Systems, October 2009

4.1.4 Mosaic and COPD patients who smoke

The most common mosaic group in Wirral who are COPD patients and smoke are group G. Characteristics of this group can be found in the appendix table 2

4.1.5 COPD and Smoking Prevalence by locality and GP practice

Table 4.1 below shows the smoking status of COPD patients in GP practices in Wirral split by locality. Data for individual GP practices shows that some practices have smoking prevalence for COPD patients of over 50% (Appendix 3).

Table 4.1 - Smoking status of COPD patients by locality

Locality	Number of current smokers	Current smoker (%)	Ex smoker (%)	Never smoked (%)	Unknown smoking status (%)
Bebington	368	23.6	48.3	27.7	0.4
Birkenhead	1480	37.6	43.7	18.6	0.2
Wallasey	561	36.8	44.9	17.8	0.4

Source - GP Clinical Systems, October 2009

4.1.6 COPD and Smoking Cessation

Ninety two percent of patients with diagnosed COPD have been offered smoking cessation advice. However, as seen previously a significant proportion of patients continue to smoke.

4.2 Occupational Exposure

Intense and prolonged exposure to workplace dusts found in coal mining, gold mining, and the cotton textile industry and chemicals such as cadmium, isocyanates, and fumes from welding have been implicated in the development of airflow obstruction, even in nonsmokers (Devereux and Graham, 2006). Workers who smoke and are exposed to these particles and gases are even more likely to develop COPD. Intense silica dust exposure causes silicosis, a restrictive lung disease distinct from COPD; however, less intense silica dust exposures have been linked to a COPD-like condition (Hnizdo and Vallyathan, 2003). Occupations which are at most risk include coal miners, construction workers who handle cement, metal workers, grain handlers, cotton workers and workers in paper mills. However, the effect of occupational pollutants on the lungs appears to be substantially less important than the effect of cigarette smoking (Loscalzo et al., 2008).

4.3 Air Pollution

Studies in many countries have found that people who live in large cities have a higher rate of COPD compared to people who live in rural areas (Halbert et al., 2006). Urban air pollution may be a contributing factor for COPD as it is thought to slow the normal growth of the lungs although the long-term research needed to confirm the link has not been done. In many developing countries indoor air pollution from cooking fire smoke (often using biomass fuels such as wood and animal dung) is a common cause of COPD, especially in women (Kennedy et al., 2007).

4.3.1 The health effects of air pollution and COPD

There is strong relationship between air pollutants including, nitrogen dioxide and particulate matter and hospital admissions and mortality in people with COPD (Naess et al., 2006; Samoli et al., 2006; Anderson et al., 1997; Atkinson et al., 2001). Studies have shown that the percentage change in mean number of daily admissions per 10 $\mu g/m^3$ increase in PM_{10} for COPD plus asthma and all-respiratory (65+ yr) were 1.0% (0.4, 1.5) and 0.9% (0.6, 1.3) respectively (Atkinson et al., 2001). Mortality rates for respiratory diseases show a 1.3% (95 percent confidence interval: 1.005, 1.020) increase, for each 10-µg/m3 increase in PM10 in urban air the same or next few days (World Health Organization, 2004).

4.3.2 Inequalities in Air Pollution

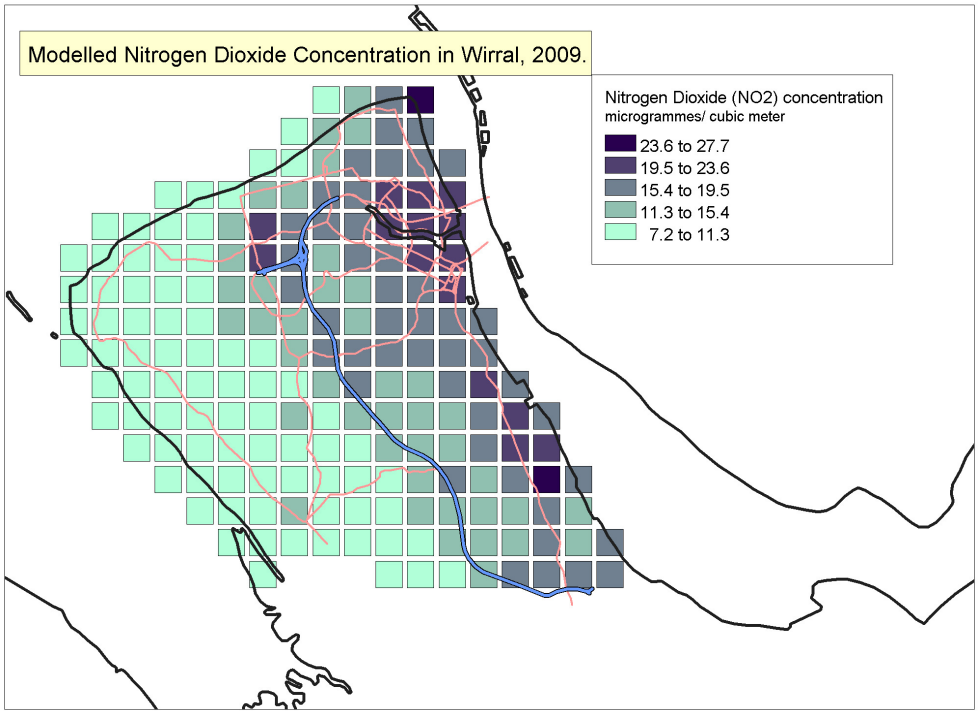
Pollution and poor air quality are associated with deprivation. According to Friends of the Earth (2001), sixty-six per cent of carcinogenic chemicals emitted into the air are released in the 10 per cent most deprived wards. Local authority areas that think they may struggle to meet air pollution targets have to declare Air Quality Management Areas. At present Wirral does not have any Air Quality Management areas.

The EU has set targets that the maximum annual mean concentration of NO_2 - should not exceed 40 $\mu g/m^3$. Nationally this target is exceeded in parts of London and around busy motorways, but is not exceeded in Wirral. We can see in Map 4.3 the modelled nitrogen dioxide concentration across Wirral. It is significantly higher in the more industrial, more deprived East of Wirral than the West of Wirral. The highest concentrations are at the top of New Brighton and around Eastham.

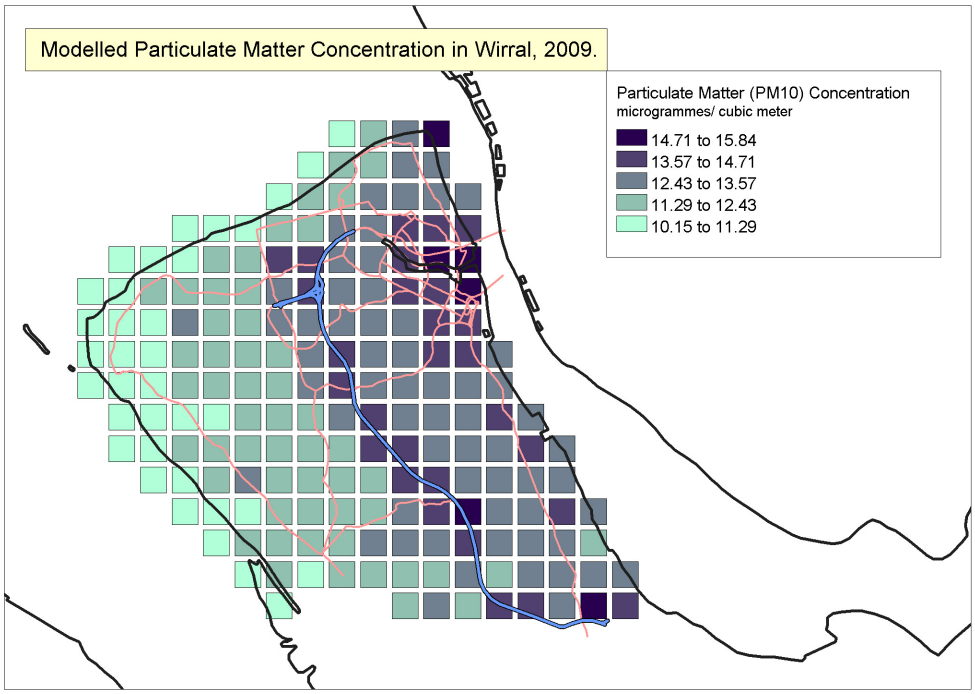
Particulate matter (known as PM10) is made up of very small liquid and solid particles that float in the air that are less than 10 micrometers in diameter (human hair ranges from 17-180 micrometers in diameter). These types of particles are of concern to public health because they are small enough to be inhaled into the deepest parts of the lung. The sources of these small particles are wide ranging and include transport, industry, construction, and particles carried on the wind from neighbouring countries. There is also a small amount from natural sources, such as dust blown from Africa or sea salt. Concern about the potential health impacts of PM10 has increased very rapidly over recent years. The EU has targets that the maximum annual mean concentration of PM10 should not exceed 40 $\mu g/m^3$. These targets were missed by some parts of the UK (but not Wirral or the North West) in 2005, and a new target end date of 2011 was negotiated for them.

Map 4.4 shows the levels of PM10 across Wirral. As with nitrogen dioxide the levels are higher in the East than the West of Wirral, and also in Birkenhead town centre and around the M53 motorway.

Map 4.3 - Modelled Nitrogen Dioxide Concentration in Wirral.



Map 4.4 - Modelled Particulate Matter Concentration in Wirral.



Source: Air Quality UK website.

5. Inequalities in Treatment and Management of COPD

5.1 COPD and Primary Care

This section will investigate the treatment of COPD in primary care in relation to inequalities and/or inequity.

5.1.1 COPD and QOF

Overall for COPD QOF indicators Wirral achieved 98.4% of points available compared to 97% and 97.4% in the North West and England respectively. The QoF contains four indicators for COPD, which involve initial diagnosis to ongoing management. Wirral scores higher than the North West average for all four indicators but performance is variable compared to the England average (Table 5.1).

Table 5.1 – QOF Indicators related to COPD

	Wirral	North West	England
The % of patients with COPD diagnosed after 1st April 2008 in whom the diagnosis has been confirmed by post bronchodilator spirometry	92.9%	89.3%	90.9%
The % of patients with COPD who have had Influenza Immunisation	92.7%	91.1%	98.8%
The % of patients with COPD with a record of FeV1 in the previous 15 months	81.4%	81.0%	96.5%
The % of patients with COPD receiving inhaled treatment in whom there is a record that inhaler technique has been checked in the previous 15 months	92.1%	90.9%	96.0%

Source – Information Centre QOF, 2008/09

QoF performance for individual GP practices are contained in Appendix 4.

5.1.2 COPD and Spirometry Test

COPD is confirmed by a simple test called “spirometry” that measures how much air a person can inhale and exhale, and how fast air can move into and out of the lungs. NICE Guidance suggests that patients with COPD have an annual spirometry test.

In Wirral, 87.8% of diagnosed patients had received a spirometry test. About 30% received a spirometry test in the last 12 months (Table 5.2).

Table 5.2 Diagnosed COPD Patients who have received a Spirometry Test

Time since last spirometry test	Number	Percent
1 year	2124	30.3%
1-2 years	1528	21.8%
2-3 years	800	11.4%
3+ years	1709	24.4%
Never	853	12.2%

Source - GP Clinical Systems, October 2009

5.1.3 Spirometry Test and Locality

The highest propotion of patients having a spirometry test within the last 12 months was in Wallasey. This ranged from 5% to 80% across GP practices (Appendix 5)

Table 5.3 Spriometry Test in Wirral and Locality

Locality	Total Number Receiving a Test		< 1year		1+ year	
	Number	%	Number	%	Number	%
Bebington	1338	85.7	499	37.3	839	62.7
Birkenhead	3453	87.8	973	28.2	2480	71.8
Wallasey	1370	89.9	652	47.6	718	52.4

Source - GP Clinical Systems, October 2009

5.1.4 COPD and Inhaler Technique

In addition to a spirometry test patients with COPD receive checks on their inhaler technique. Forty six percent of COPD patients had good inhaler technique whereas 3.4% had poor inhaler technique recorded in the GP clinical system. Good inhaler technique varied from 1% to 95% across GP practices (Appendix 6)

5.1.5 COPD Care Plan

Eleven percent (777 patients) of COPD pateitns had received a car plan. The highest percentage of care plans was in Wallasey locality (Table 5.5). The percentage of patients with a care plan varied from 0% to 94% across GP practices (Appendix 7)

Table 5.5 - Diagnosed COPD Patients and Care Pan and Locality

Locality	Number	Percent
Bebington	44	2.8%
Birkenhead	248	6.3%
Wallasey	502	32.9%
Wirral	777	11.1%

Source - GP Clinical Systems, October 2009

6 COPD and Secondary Care

6.1 COPD and Emergency Hospital Admissions

The standardised admission ratio (SAR) is the ratio of actual emergency admissions to the expected level. In 2008/09 the SAR for COPD in Wirral was **110.9** (100 is equal to England). This means that in 2008/09 the number of admissions was 11% higher than the England average.

6.1.1 Trends in Emergency Admissions

The number of emergency admissions for COPD has been fairly consistent during the last 6 years, with on average about 1000 admissions per year (Table 6.1). The SAR for Wirral is decreasing since 2007/08 and current data for 2009/10 shows that this figure has reduced further to 102.6.

Table 6.1 - Trends in hospital admissions for COPD in Wirral, 2002/03 – 2008/09

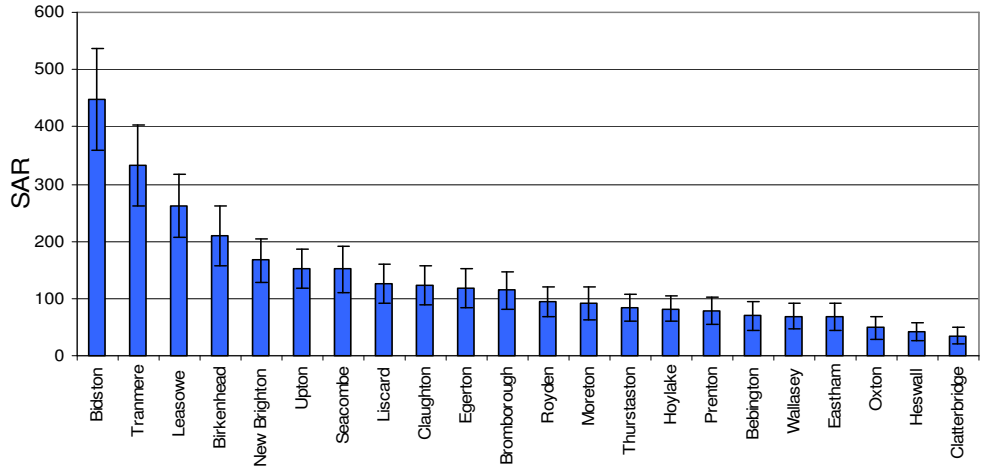
	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10*
Number of admissions	961	997	1000	935	1086	1093	999	707
SAR	125.7	115.7	115.7	110	127.6	134.2	110.9	102.6
Lower	117.9	108.6	108.7	103.1	120.2	126.4	104.1	95.2
Upper	133.9	123.1	123.1	117.3	135.5	142.4	118	110.4

Source – Dr Foster, 2009; * **Data is up to end of December 2009**

6.1.2 Emergency Admissions and Ward

In 2008/09, the SAR for COPD varies significantly across Wirral wards (Figure 6.1). In Bidston the admissions were four and a half times the national average.

Figure 6.1 – Standardised Admission Ratio for COPD, Wirral wards, 2008/09

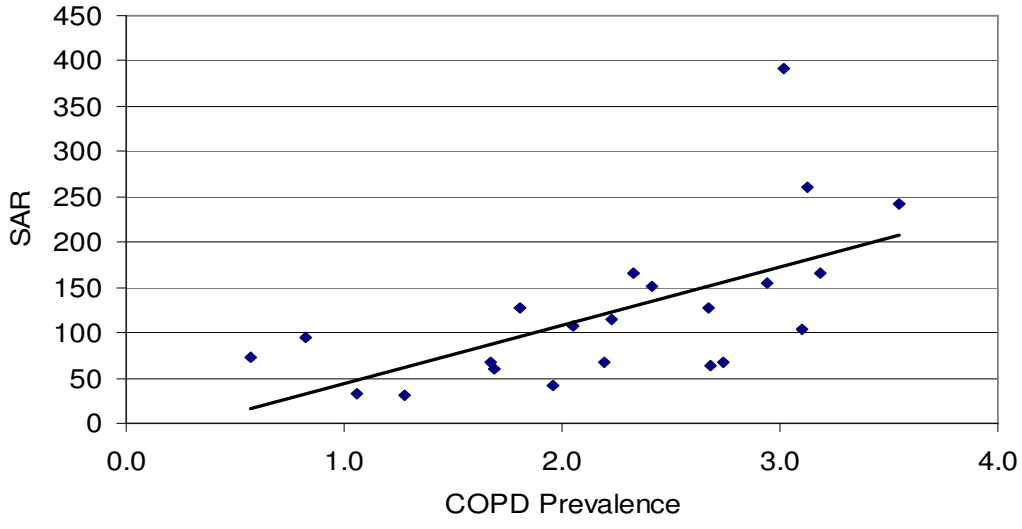


Source – Dr Foster Intelligence, 2009

6.1.3 COPD Emergency Admissions and COPD Prevalence Diagnosed

There is a strong link between COPD prevalence in each ward and being admitted to hospital (r value = 0.6). Figure 6.2 shows the correlation between COPD prevalence and hospital admissions (SAR) for COPD.

Figure 6.2 Correlation between COPD prevalence and hospital admissions

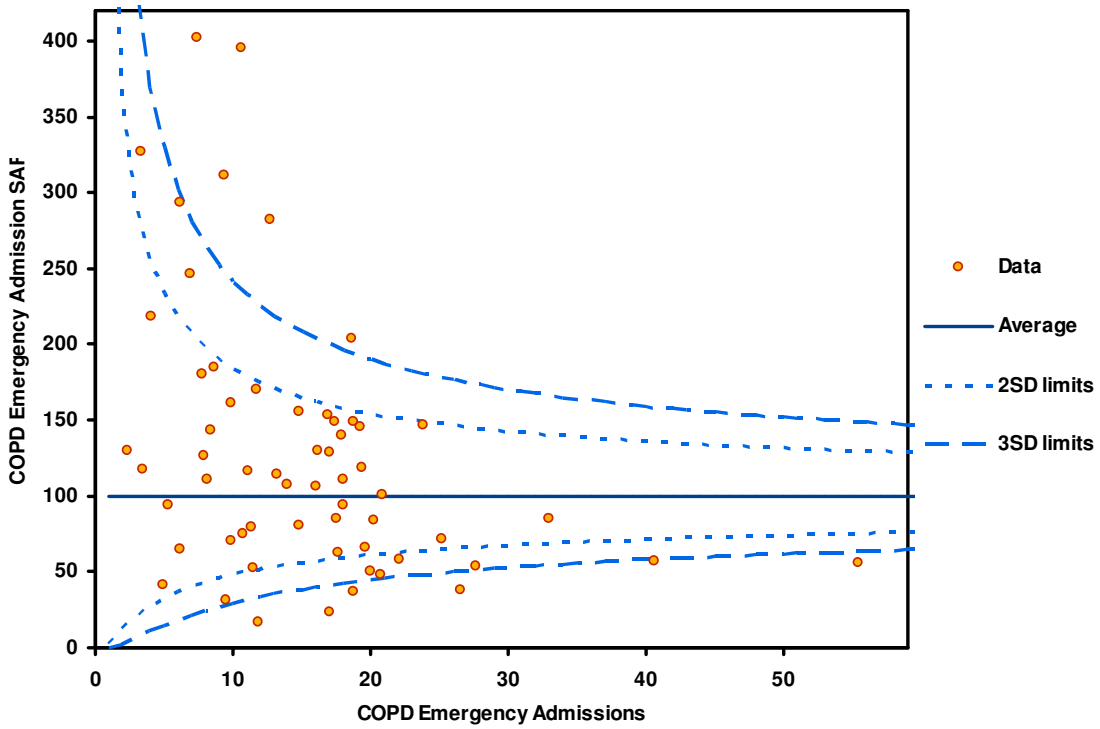


Source: Dr Foster Intelligence, 2009

6.1.4 Statistical Process Control Chart and Emergency Admissions from COPD

Figure 6.3 below shows the majority of GPs fall within the expected emergency admissions for COPD. There are 5 outliers that suggests they are significantly higher than the rest of Wirral practices for emergency admissions (Appendix 8).

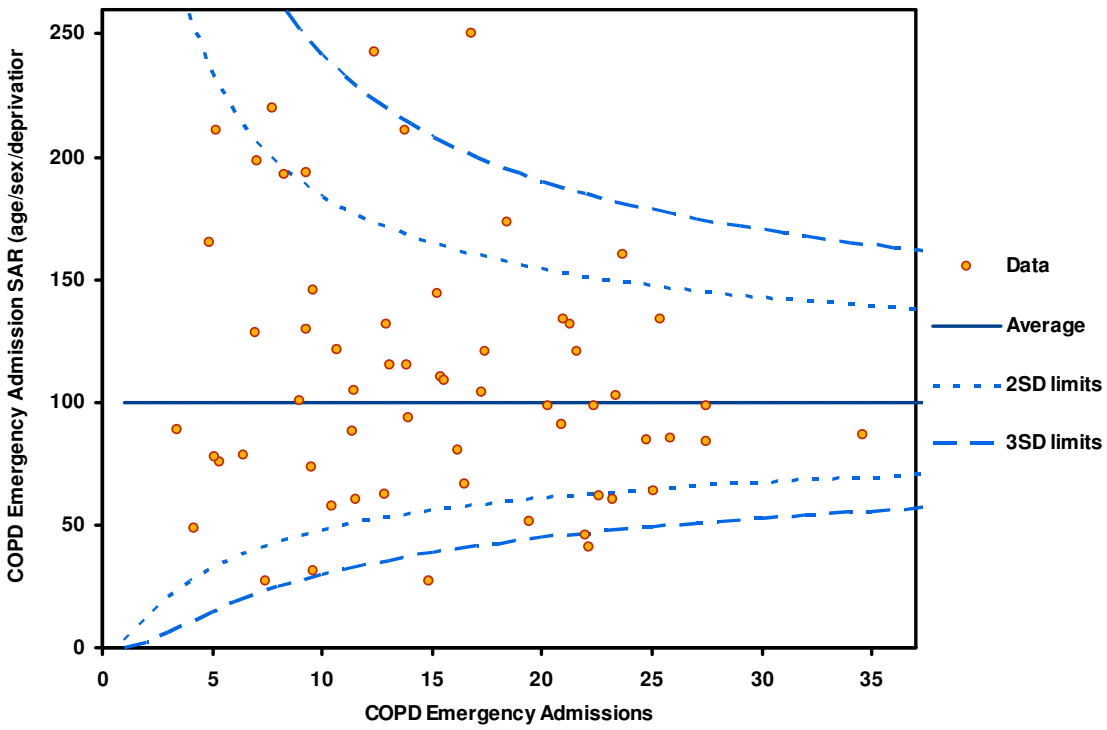
Figure 6.3 – Funnel Plot of emergency admissions for COPD, 2008/09



Source: Dr Foster

Figure 6.4 below shows the majority of GPs fall within the expected emergency admissions for COPD weighting for age, sex and deprivation. After adjusting emergency admissions for deprivation there are 2 outliers suggesting that they are significantly higher than the rest of Wirral practices (Appendix 9).

Figure 6.4 - Funnel Plot of Hospital Admissions for COPD (Age/Sex/Deprivation)

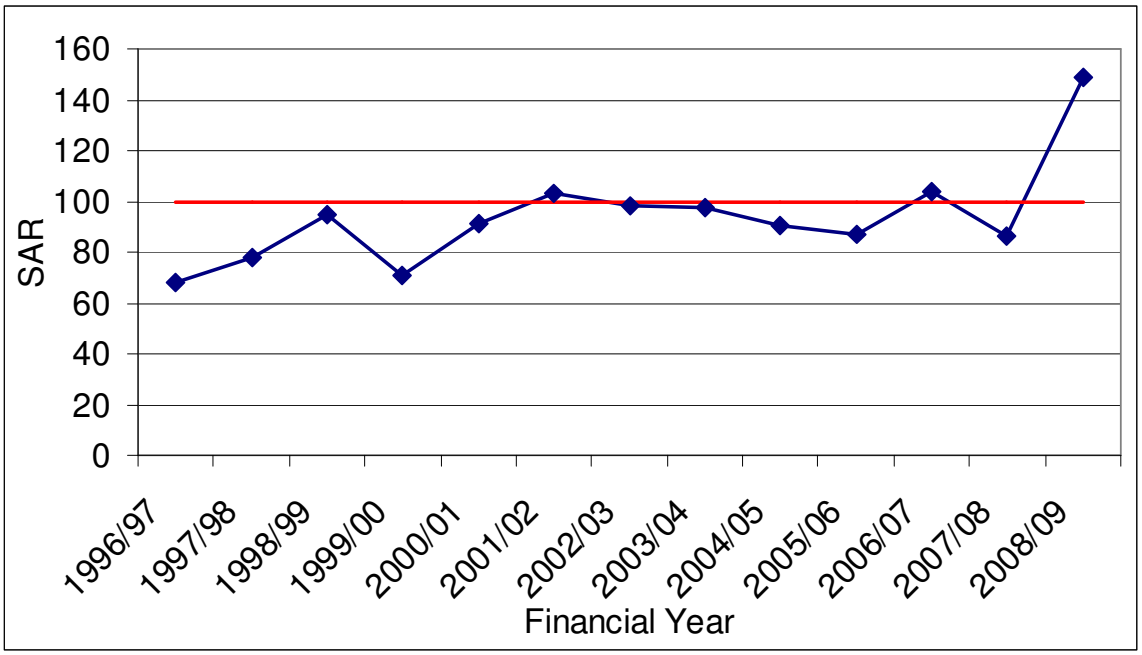


Source: Dr Foster

6.1.5 Deaths in hospital from COPD

The relative risk ratio assumes 100 is the England average and what you would expect the normal amount of deaths there would be in hospital for COPD. From 1996/97 to 2007/08 the average number of COPD deaths in hospital was 70 and the relative risk ratio was similar to the England average (Figure 6.2). In 2008/09 the number of deaths increased to 93 and relative risk ratio was 50% higher than the England average.

Figure 6.2 Trend in Relative Risk Ratio (RRR) for COPD deaths in Hospital



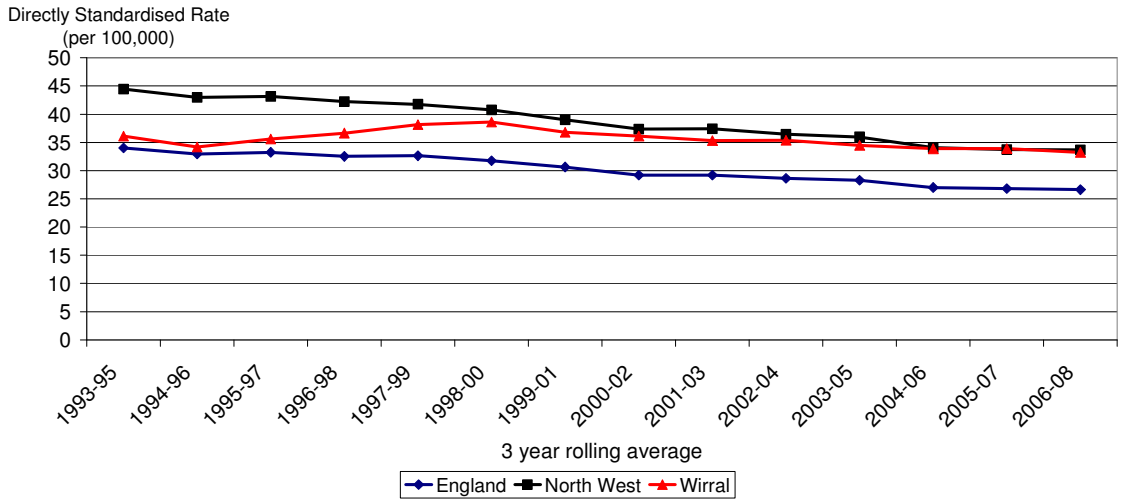
Source - Dr Foster, 2009

7 Deaths from COPD

There are about 200 deaths from COPD in Wirral each year. The Standardised Mortality Ratio (SMR) is 130, which means that the mortality in Wirral is 30% higher than the England average.

The trend in mortality from COPD is decreasing in Wirral similar to the reductions in England as a whole (Figure 7.1).

Figure 7.1 - Directly Standardised Mortality Rate from bronchitis, emphysema and other COPD (ICD9 490-492, 496 adjusted; ICD10 J40-J44):per 100,000 population, all ages, 1993-2008



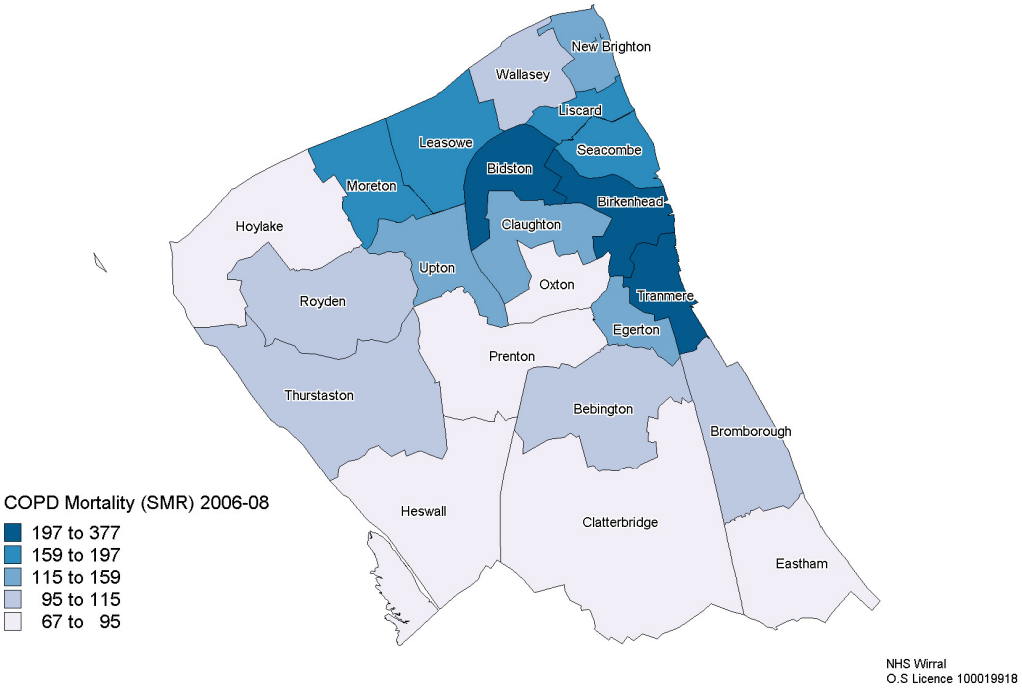
Source – NCHOD, 1993-2007

7.1 Deaths from COPD and Wirral Ward

The mortality from COPD across Wirral varies significantly between Wirral wards (Map 7.1).

- Bidston ward had a death rate that is nearly 4 times the England average;
- Clatterbridge ward had a death rate that was 33% less than the England average.

Map 7.1 – Standardised Mortality Ratio from bronchitis, emphysema and other COPD (ICD9 490-492, 496 adjusted; ICD10 J40-J44):, all ages, 2006-2008



Source: ONS Annual Death Table, 2006-2008

8. Key issues

- There were large inequalities in diagnosed prevalence of COPD across Wirral and between GP practices.
- Based upon modelled prevalence estimates there are about 6000 people living in Wirral which may have COPD but are currently undiagnosed
- Data quality for spirometry FEV score within GP practices was poor.
- Data quality for ethnicity data within GP practices was poor
- There were large variations in current smoking for patients diagnosed with COPD across GP practices. Smoking cessation interventions should target practice in Birkenhead and Wallasey.
- Air pollution in Wirral is higher in the east of the borough.
- Based upon QoF data the quality of care that COPD patients receive in primary care in Wirral is high.
- Eighty seven percent of COPD patients had their diagnosed confirmed by a spirometry test.
- The proportion of patients who receive a spirometry check within 12 months was below one third of all COPD patients. This varied significantly across practices.
- Very few patients had received a care plan for the management of their COPD.
- Comparisons of hospital admissions for COPD showed that five practices were classified as outliers.
- Deaths from COPD in hospital increased significantly in 2008/09.

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10. Appendix

1 – Diagnosed Prevalence of COPD & Wirral Wards

Ward	% with COPD on GP registers
Bebington	2.2
Bidston and St James	3.0
Birkenhead and Tranmere	3.2
Bromborough	2.2
Clatterbridge	1.3
Claughton	1.8
Eastham	2.7
Greasby Frankby and Irby	1.7
Heswall	1.1
Hoylake and Meols	0.8
Leasowe and Moreton East	3.5
Liscard	2.7
Moreton West and Saughall Massie	3.1
New Brighton	2.3
Oxton	2.0
Pensby and Thingwall	2.0
Prenton	2.7
Rock Ferry	3.1
Seacombe	2.4
Upton	2.9
Wallasey	1.7
West Kirby and Thurstaston	0.6

Source – GP Clinical Systems, October 2009

2 - MOSAIC Groups

Group G

Key Features	Communication
Families	**Receptive**
Low incomes	TV
Income Support	Posters
Free school meals	Telemarketing
Terraces and semis	Drop-in centres
Large council estates	**Unreceptive**
Outer suburbs	Internet
Bad place to live	Magazines, Newspapers
Heavy TV viewing	Telephone advice lines

Group H

Key Features	Communication
Middle aged couples	**Receptive**
Mostly poorly educated	TV
Council estates	Telemarketing
Small towns	Red top newspapers
Exercised Right to Buy	**Unreceptive**
Self reliant and capable	Internet
Poor diet	Telephone advice lines
Heavy smokers	Magazines, Broadsheets
Heavy viewers of TV	

Group I

Key Features	Communication
Older people	**Receptive**
Low incomes	TV
Low savings	Post Office
Pension Credit	Personal contact
Some small bungalows	**Unreceptive**
Some sheltered homes	Internet
TV popular	Magazines
Bingo, dominoes, cards	Broadsheet newspapers
HES emergencies	Telephone advice lines

3 - Smoking Prevalence by GP

Locality	GP Code	Number of smokers	Prevalence (%)
Bebington	Allport Surgery	33	31.7
	Church Road Medical Centre	13	30.2
	Civic Medical Centre	42	28.2
	Eastham Group Practice	91	27.8
	Greasby Group Practice	19	13.1
	Hoylake & Meols Medical Centre	16	20.5
	Kings Lane Medical Practice	14	22.2
	Park Medical Centre	21	28.4
	Pensby Surgery / Heswall MC	20	20.4
	Silverdale Medical Centre	19	23.5
	Spital Surgery	11	21.2
	Teehey Lane Medical Centre	16	25.8
	West Wirral Group Practice	53	18.6
Birkenhead	Cavendish Medical Centre	64	47.1
	Commonfield Road Surgery	60	33.1
	Devaney Medical Centre	51	33.3
	Gladstone Medical Centre	89	40.8
	Greenway Road Surgery	64	33.7
	Hamilton Medical Centre	54	49.5
	Heatherlands Medical Centre	48	46.6
	Holmlands Medical Centre	23	33.8
	Hoylake Road Medical Centre	28	23.1
	Miriam Medical Centre	90	50.8
	Moreton Cross Group Practice	93	40.6
	Moreton Health Centre	130	33.0
	Moreton Medical Centre	36	35.3
	Parkfield Medical Centre (Chesters)	67	43.8
	Parkfield Medical Centre (Hawthornthwaite)	55	34.0
	Prenton Medical Centre	9	21.4
	Riverside Surgery	85	46.2
	Upton Group Practice	32	26.7
	Victoria Park Health Centre	73	36.5
	Villa Medical Centre	57	23.9
	Vittoria Medical Centre (Edwards)	90	52.3
	Vittoria Medical Centre (Murty)	33	49.3
	Whetstone Medical Centre	96	41.4
	WOODCHURCH MEDICAL CENTRE	21	48.8
	Woodchurch Road Surgery	32	22.9
Wallasey	Blackheath Medical Centre	27	44.3
	Central Park Medical Centre	85	43.8
	Field Road Health Centre	34	35.8
	Grove Medical Centre	15	20.0
	Grove Road Surgery	6	16.7
	Leasowe Medical Centre	25	52.1
	Leasowe Primary Care Centre	34	58.6

	Liscard Group Practice	34	38.2
	Manor Health Centre	56	29.2
	Martins Lane Surgery	21	47.7
	Seabank Medical Centre	16	42.1
	Somerville Medical Centre	77	37.2
	St. Hilary Brow Group Practice	39	29.8
	St.George's Medical Centre	92	35.9

Source – GP Clinical Systems, October 2009

4 – QoF Performance for individual GP practices

GP Code	**The % of patients with COPD diagnosed after 1st April 2008 in whom the diagnosis has been confirmed by post bronchodilator spirometry**	**The % of patients with COPD who have had Influenza Immunisation**	**The % of patients with COPD with a record of FeV1 in the previous 15 months**	**The % of patients with COPD receiving inhaled treatment in whom there is a record that inhaler technique has been checked in the previous 15 months**
N85001	77.5%	48.0%	66.1%	0.0%
N85002	91.4%	73.2%	87.3%	100.0%
N85003	92.2%	73.4%	95.2%	87.5%
N85004	97.3%	77.6%	92.5%	80.0%
N85005	92.4%	89.7%	91.8%	66.7%
N85006	93.3%	73.5%	92.2%	91.7%
N85007	93.3%	81.0%	89.7%	100.0%
N85008	99.1%	73.9%	92.7%	100.0%
N85009	100.0%	89.5%	93.2%	100.0%
N85011	98.5%	91.8%	100.0%	100.0%
N85012	89.5%	72.7%	92.0%	81.8%
N85013	92.1%	95.1%	96.6%	87.5%
N85014	96.6%	73.8%	93.8%	100.0%
N85015	100.0%	90.4%	93.9%	100.0%
N85016	90.4%	79.8%	93.8%	100.0%
N85017	89.2%	71.3%	92.5%	85.7%
N85018	96.4%	86.2%	94.0%	100.0%
N85019	86.6%	79.9%	93.9%	91.7%
N85020	90.5%	81.5%	92.8%	81.8%
N85021	91.7%	95.1%	90.8%	100.0%
N85022	98.2%	88.1%	100.0%	100.0%
N85023	87.8%	75.2%	92.1%	100.0%
N85024	88.9%	74.6%	94.0%	100.0%
N85025	97.6%	98.8%	98.6%	100.0%
N85027	93.6%	78.3%	92.7%	100.0%
N85028	93.6%	84.2%	92.7%	92.3%
N85029	91.8%	84.8%	92.0%	100.0%
N85031	86.1%	88.0%	95.5%	93.3%
N85032	95.2%	70.2%	89.1%	80.0%
N85034	93.9%	71.4%	84.4%	100.0%
N85037	97.7%	76.9%	92.2%	80.0%
N85038	94.6%	93.7%	96.6%	100.0%
N85040	90.1%	69.6%	73.9%	88.9%
N85041	88.3%	84.1%	91.9%	85.7%
N85044	90.3%	88.5%	93.2%	100.0%
N85046	97.5%	80.9%	94.7%	100.0%

N85047	93.0%	87.8%	92.4%	80.0%
N85048	95.2%	76.4%	93.3%	100.0%
N85051	92.5%	81.7%	89.8%	100.0%
N85052	100.0%	88.9%	100.0%	100.0%
N85053	93.3%	80.0%	92.4%	85.7%
N85054	97.9%	91.5%	90.3%	80.0%
N85056	92.6%	84.3%	96.1%	100.0%
N85057	87.3%	77.8%	92.7%	100.0%
N85058	93.1%	89.8%	90.4%	100.0%
N85059	94.2%	95.1%	98.1%	75.0%
N85614	97.1%	100.0%	100.0%	100.0%
N85616	94.2%	73.7%	90.5%	100.0%
N85617	92.9%	75.6%	100.0%	100.0%
N85619	97.6%	82.2%	94.1%	100.0%
N85620	91.7%	94.2%	98.6%	100.0%
N85625	88.3%	76.7%	93.2%	100.0%
N85629	88.6%	89.1%	96.6%	100.0%
N85633	97.3%	78.4%	90.9%	100.0%
N85634	100.0%	94.2%	97.9%	100.0%
N85635	86.5%	61.9%	69.4%	100.0%
N85640	91.8%	56.9%	59.6%	100.0%
N85643	97.2%	94.7%	93.9%	100.0%
N85648	86.1%	91.1%	94.6%	100.0%
Y02162	100.0%	100.0%	100.0%	100.0%

Source – The Information Centre, 2008/09

5 - COPD patients who have received a Spirometry Test and GP Practice

Locality	GP	Total number of patients with spirometry tests		Last spirometry was within?			
				<1 years		1+ years	
		Number	%	Number	%	Number	%
	N85001	67	90.5	4	6.0%	63	94.0%
	N85003	95	91.3	16	16.8%	79	83.2%
	N85005	309	94.5	190	61.5%	119	38.5%
	N85006	118	79.2	31	26.3%	87	73.7%
	N85007	85	86.7	15	17.6%	70	82.4%
	N85008	234	82.1	65	27.8%	169	72.2%
	N85032	115	79.3	35	30.4%	80	69.6%
	N85054	57	90.5	36	63.2%	21	36.8%
	N85057	47	75.8	10	21.3%	37	78.7%
	N85058	65	80.2	24	36.9%	41	63.1%
	N85059	61	78.2	16	26.2%	45	73.8%
	N85617	45	86.5	37	82.2%	8	17.8%
Bebington	N85633	40	93	20	50.0%	20	50.0%
	N85009	166	91.7	10	6.0%	156	94.0%
	N85013	98	81.7	25	25.5%	73	74.5%
	N85014	112	80	15	13.4%	97	86.6%
	N85015	142	92.8	29	20.4%	113	79.6%
	N85016	151	82.1	17	11.3%	134	88.7%
	N85017	110	80.9	7	6.4%	103	93.6%
	N85018	228	95.8	156	68.4%	72	31.6%
	N85019	193	83.2	22	11.4%	171	88.6%
	N85020	183	91.5	47	25.7%	136	74.3%
	N85021	102	93.6	38	37.3%	64	62.7%
	N85022	66	97.1	22	33.3%	44	66.7%
	N85028	209	91.3	23	11.0%	186	89.0%
	N85031	191	87.6	23	12.0%	168	88.0%
	N85034	140	86.4	61	43.6%	79	56.4%
	N85037	79	76.7	42	53.2%	37	46.8%
	N85038	155	90.1	63	40.6%	92	59.4%
	N85040	338	85.8	144	42.6%	194	57.4%
	N85041	169	88.9	28	16.6%	141	83.4%
	N85046	92	76	7	7.6%	85	92.4%
	N85048	91	89.2	40	44.0%	51	56.0%
	N85051	129	84.3	48	37.2%	81	62.8%
	N85625	169	95.5	66	39.1%	103	60.9%
	N85634	63	94	3	4.8%	60	95.2%
	N85643	41	97.6	17	41.5%	24	58.5%
Birkenhead	Y02162	36	83.7	20	55.6%	16	44.4%

	N85012	227	88.7	113	49.8%	114	50.2%
	N85023	173	90.1	64	37.0%	109	63.0%
	N85024	196	94.7	134	68.4%	62	31.6%
	N85025	111	84.7	38	34.2%	73	65.8%
	N85027	180	92.8	110	61.1%	70	38.9%
	N85052	32	88.9	3	9.4%	29	90.6%
	N85053	77	81.1	27	35.1%	50	64.9%
	N85614	37	97.4	26	70.3%	11	29.7%
	N85616	73	82	13	17.8%	60	82.2%
	N85620	74	98.7	50	67.6%	24	32.4%
	N85624	46	95.8	34	73.9%	12	26.1%
	N85635	40	90.9	15	37.5%	25	62.5%
	N85640	48	82.8	5	10.4%	43	89.6%
Wallasey	N85648	56	91.8	20	35.7%	36	64.3%

Source - GP Clinical Systems, October 2009

6 - Inhale technique of COPD patients registered on GP clinical systems

Ward	good	moderate	poor	shown	unknown
Bebington	40.1	9.9	2.7	14.8	32.5
Bidston and St James	57.3	10.0	1.8	2.3	28.5
Birkenhead and Tranmere	49.7	22.4	3.8	5.8	18.4
Bromborough	42.4	7.8	3.9	9.1	36.9
Clatterbridge	33.0	8.8	3.3	13.2	41.8
Claughton	51.6	10.9	1.6	5.4	30.6
Eastham	37.1	6.4	1.3	4.3	50.9
Greasby, Frankby and Irby	59.9	8.3	0.8	9.1	21.9
Heswall	37.0	6.5	2.9	23.2	30.4
Hoylake and Meols	47.7	9.3	2.8	5.6	34.6
Leasowe and Moreton East	40.7	2.7	5.0	7.8	43.8
Liscard	48.0	8.2	5.9	6.4	31.6
Moreton West and Saughall Massie	38.5	3.5	5.6	4.9	47.6
New Brighton	48.3	6.2	5.5	8.6	31.4
Oxton	50.2	9.5	2.3	16.7	21.3
Pensby and Thingwall	38.0	5.6	3.0	31.2	22.2
Prenton	33.0	12.5	2.9	31.9	19.7
Rock Ferry	46.0	19.6	2.1	10.7	21.6
Seacombe	56.1	9.0	3.5	3.5	27.8
Upton	59.5	3.3	3.1	4.1	30.1
Wallasey	49.4	10.0	4.4	7.2	28.9
West Kirby and Thurstaston	44.4	2.8	5.6	2.8	44.4
NHS Wirral	**46.2**	**9.1**	**3.4**	**9.8**	**31.4**

Source - GP Clinical Systems, October 2009

7 – COPD patients who have been offered a COPD care plan

Locality	GP	Number	Percent
Bebington	N85001	2	2.7
	N85003		0.0
	N85005	2	0.6
	N85006	1	0.7
	N85007		0.0
	N85008	36	12.6
	N85032		0.0
	N85054		0.0
	N85057		0.0
	N85058		0.0
	N85059		0.0
	N85617	1	1.9
	N85633	2	4.7
Birkenhead	N85009		0.0
	N85013		0.0
	N85014		0.0
	N85015	3	2.0
	N85016		0.0
	N85017		0.0
	N85018	225	94.5
	N85019		0.0
	N85020	3	1.5
	N85021		0.0
	N85022		0.0
	N85028		0.0
	N85031		0.0
	N85034		0.0
	N85037		0.0
	N85038		0.0
	N85040		0.0
	N85041		0.0
	N85046	1	0.8
	N85048	1	1.0
	N85051	1	0.7
	N85625		0.0
	N85634	6	9.0
	N85643		0.0
	Y02162	8	18.6
Wallasey	N85012	165	64.5
	N85023	2	1.0
	N85024	182	87.9
	N85025	10	7.6
	N85027	37	19.1
	N85052	2	5.6

	N85053	25	26.3
	N85614	25	65.8
	N85616	1	1.1
	N85620		0.0
	N85624	30	62.5
	N85635	22	50.0
	N85640		0.0
	N85648	1	1.6

Source – GP Clinical Systems, October 2009

8 – Funnel Plot of Emergency Admissions for COPD (Standardised for age and sex)

Locality	Area	Events	Standardised admission ratio	Significance
Birkenhead	N85017	20	170	
Birkenhead	N85044	21	100.8	
Birkenhead	N85009	22	129.2	
Birkenhead	N85015	10	49.9	Low (0.025)
Birkenhead	N85029	10	126.8	
Birkenhead	N85031	36	282.5	**High (0.001)**
Birkenhead	N85041	17	84.2	
Birkenhead	N85021	18	293.9	High (0.025)
Birkenhead	N85037	29	310.9	**High (0.001)**
Birkenhead	N85022	14	180.8	
Birkenhead	N85046	13	116.7	
Birkenhead	N85625	30	402	**High (0.001)**
Birkenhead	N85028	28	145.1	
Birkenhead	N85040	28	149.5	
Birkenhead	N85048	23	155.2	
Birkenhead	N85051	25	140.1	
Birkenhead	N85034	20	111.3	
Birkenhead	N85643	2	40.9	
Birkenhead	N85016	26	149.1	
Birkenhead	N85013	15	54.2	Low (0.025)
Birkenhead	N85020	38	204.3	**High (0.001)**
Birkenhead	N85018	11	62.2	
Birkenhead	N85634	11	327.2	High (0.025)
Birkenhead	N85038	42	395.2	**High (0.001)**
Birkenhead	N85019	23	118.7	

Birkenhead	N85014	10	48.1	Low (0.025)
BWW	N85003	6	52.5	
BWW	N85633	4	65.2	
BWW	N85006	10	37.7	Low (0.001)
BWW	N85005	28	85.1	
BWW	N85032	18	71.4	
BWW	N85007	23	56.7	Low (0.001)
BWW	N85059	15	107.8	
BWW	N85054	9	79.4	
BWW	N85047	4	23.4	Low (0.001)
BWW	N85001	12	80.8	
BWW	N85058	7	37.2	Low (0.001)
BWW	N85617	2	16.8	Low (0.001)
BWW	N85057	7	71.1	
BWW	N85011	17	94.6	
BWW	N85002	13	58.7	Low (0.025)
BWW	N85004	13	66.4	
BWW	N85008	31	55.9	Low (0.001)
Wallasey	N85648	17	246.8	High (0.025)
Wallasey	N85027	26	153.7	
Wallasey	N85619	3	31.6	Low (0.025)
Wallasey	N85629	16	161.8	
Wallasey	N85053	12	143.4	
Wallasey	N85620	16	184.3	
Wallasey	N85052	9	110.4	
Wallasey	N85624	3	129.7	
Wallasey	N85640	4	117.2	

Wallasey	N85616	8	74.9	
Wallasey	N85023	21	129.5	
Wallasey	N85635	5	93.7	
Wallasey	N85614	9	218.2	
Wallasey	N85024	15	85.6	
Wallasey	N85012	35	146.9	
Wallasey	N85025	17	106.1	
Wallasey	N85056	15	114	

Source – Dr Foster, 2008-2009

9 - Funnel Plot of Hospital Admissions for COPD (Age/Sex/Deprivation)

Locality	Area	Events	Standardised admission ratio	Significance
Birkenhead	N85009	22	98.4	
Birkenhead	N85013	14	60.2	Low (0.025)
Birkenhead	N85014	10	51.4	Low (0.025)
Birkenhead	N85015	9	40.7	Low (0.001)
Birkenhead	N85016	24	102.5	
Birkenhead	N85017	18	104.1	
Birkenhead	N85018	11	66.8	
Birkenhead	N85019	23	83.8	
Birkenhead	N85020	38	160.2	High (0.025)
Birkenhead	N85021	18	193.4	High (0.025)
Birkenhead	N85022	14	198	
Birkenhead	N85028	28	131.4	
Birkenhead	N85029	10	88.1	
Birkenhead	N85031	32	173.6	High (0.025)
Birkenhead	N85034	20	98.5	
Birkenhead	N85037	29	210.6	High (0.025)
Birkenhead	N85038	42	250.2	**High (0.001)**
Birkenhead	N85040	28	133.5	
Birkenhead	N85041	16	63.7	Low (0.025)
Birkenhead	N85044	21	84.9	
Birkenhead	N85046	13	121.6	
Birkenhead	N85048	22	144	
Birkenhead	N85051	19	90.9	
Birkenhead	N85625	30	242.9	**High (0.001)**
Birkenhead	N85634	11	210.7	
Birkenhead	N85643	2	48.2	

BWW	N85003	6	57.4	
BWW	N85001	12	104.5	
BWW	N85002	13	80.5	
BWW	N85004	13	93.4	
BWW	N85005	27	98.3	
BWW	N85006	10	45.5	Low (0.001)
BWW	N85007	22	85.1	
BWW	N85008	30	86.8	
BWW	N85011	17	131.8	
BWW	N85032	17	109.2	
BWW	N85047	4	26.9	Low (0.001)
BWW	N85054	9	100.3	
BWW	N85057	7	73.3	
BWW	N85058	7	60.6	
BWW	N85059	14	145.6	
BWW	N85617	2	26.8	Low (0.025)
BWW	N85633	4	75.3	
Wallasey	N85012	34	133.8	
Wallasey	N85023	21	120.7	
Wallasey	N85024	14	61.9	Low (0.025)
Wallasey	N85025	17	110.1	
Wallasey	N85027	26	120.6	
Wallasey	N85052	9	128.5	
Wallasey	N85053	12	129.4	
Wallasey	N85056	15	114.9	
Wallasey	N85614	8	165.1	
Wallasey	N85616	8	62.2	
Wallasey	N85619	3	31.2	Low (0.025)

Wallasey	N85620	16	193	
Wallasey	N85624	3	88.5	
Wallasey	N85629	16	115.2	
Wallasey	N85635	5	78.1	
Wallasey	N85640	4	77.9	
Wallasey	N85648	17	219.5	High (0.025)

Source – Dr Foster, 2008-2009