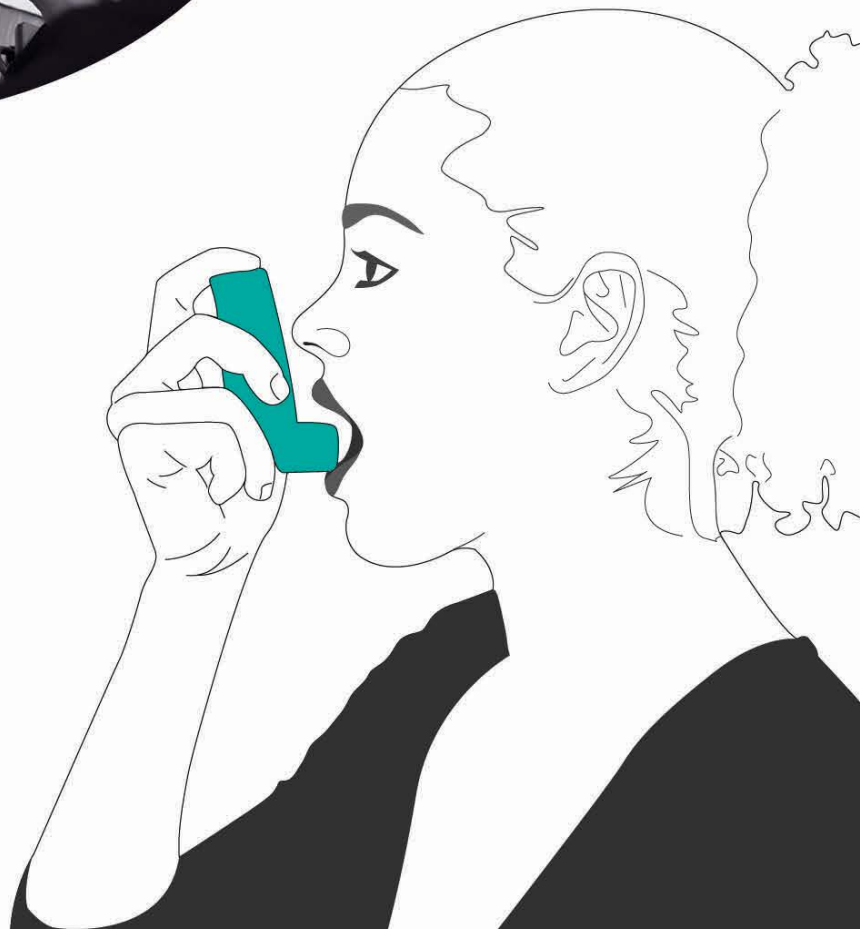


Review of Respiratory Care across Sandwell, Birmingham and Solihull

September 2013



RESPIRATORY DISEASE SERVICE REVIEW

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Abbreviations used in this document

A&E	Accident & Emergency	HCA	Health Care Assistant
ADO Index	Scoring system based on Age, Dyspnoea, Obstruction	IV	Intra-Venous
AEPTD		LA	Local Authority
ANP	Advanced Nurse Practitioner	LCN	Local Commissioning Network
BCH	Birmingham Children's Hospital	LTC	Long-Term Condition
BCHCT	Birmingham Community Health Care Trust	LTOT	Long Term Oxygen Therapy
BMI	Body Mass Index	MCD	Metropolitan County District
BODE Index	Scoring system based on BMI, Obstruction, Dyspnoea, Exercise tolerance	MDI	Metered Dose Inhaler
BSC	Birmingham & South Central	MDT	Multi-Disciplinary Team
BTS	British Thoracic Society	MRC	Medical Research Council
BXC	Birmingham CrossCity	NHS	National Health Service
CBT	Cognitive Behavioural Therapy	NICE	National Institute of Health and Care Excellence
CCG	Clinical Commissioning Group	NIV	Non Invasive Ventilation
CG	Clinical Guideline	NRAD	National Review of Asthma Deaths
COPD	Chronic Obstructive Pulmonary Disease	PEF	Peak Expiratory Flow
CQUIN	Commissioning for Quality and Innovation	PCT	Primary Care Trust
CT	Computed Tomography	PR	Pulmonary Rehabilitation
DH	Department of Health	QOF	Quality and Outcomes Framework
DOSE Index	Scoring system based on Dyspnoea, Obstruction, Smoking, Exacerbations	QoL	Quality of Life
FEV	Forced Expiratory Volume	QS	Quality Standard
GP	General Practitioner	RCP	Royal College of Physicians
GPwSI	General Practitioner with Special Interest	SAR	Standardised Admission Rate
HADS	Hospital Anxiety Depression Score	SDIP	Service Development Improvement Plan
		SDS	South Doc Services
		SGRQ	St George's Respiratory Questionnaire
		SIGN	Scottish Intercollegiate Guidelines Network

Respiratory Disease Service Review			Birmingham, Sandwell & Solihull
SOL	Solihull	UHB	University Hospitals Birmingham
SWB	Sandwell & West Birmingham	WMQRS	West Midlands Quality Review
SWBH	Sandwell & West Birmingham Hospitals	YLD	Years Lived with Disability
UA	Unitary Authority	YLL	Years of Life Lost

1 WHY THIS REVIEW WAS NECESSARY

1.1 Drivers for the review

In April 2013, Birmingham Cross-City CCG (BCC CCG) presented a paper to the Collaborative Commissioning Network (CCN) requesting the support of Sandwell & West Birmingham CCG, Birmingham South Central CCG, Birmingham Cross-City CCG and Solihull CCG to conduct a review of COPD & Asthma care for patients across the local health economy. The review was felt to be necessary due to the inequitable service provision accessible to patients locally and large variations between health outcomes for patients across the city.

The review would take a system-wide perspective of respiratory service provision, looking at the complete patient pathway and identifying opportunities for joint working across providers/CCGs, where there are significant health gains, quality improvements and QIPP efficiencies to be achieved through collaboration. It was recognised by CCGs that real improvements to respiratory health outcomes could only be achieved through collaboration between CCGs and providers when locally designing and implementing services. Though service improvements within individual CCGs and provider organisations may lead to improvements within small pockets of the local health economy, this approach would fail to tackle the system-wide transformation needed to make a real difference to respiratory care in Sandwell, Birmingham & Solihull, and reduce the level of variation between Birmingham and the rest of England.

The overarching aims of this project are to:

1. Review current respiratory service provision across Birmingham and Solihull
2. Identify opportunities for joint working between CCGs and develop joint initiatives for improving respiratory care across Sandwell, Birmingham and Solihull where appropriate
3. Ensure patients receive integrated care and the same high standard of care regardless of service or provider
4. Ensure local implementation of the recommendations of the NHS Outcomes Strategy for COPD & Asthma (2011) and the NICE Quality Standards for COPD (2012) and Asthma (2013)

Following CCN agreement to conduct this review a project team was established which included representation from the four CCGs, Public Health and the Central & Midlands Commissioning Support Unit.

The review focussed on 4 main aspects of respiratory care i.e.:

1. A skills audit across primary care
2. A scoping exercise of current service provision across primary, community and secondary care services
3. Epidemiology
4. A review of the clinical evidence base for COPD/Asthma and best practice models
5. Stakeholder views of how services for patients with COPD and Asthma could be improved

This report presents the findings and recommendations of the review.

2 EPIDEMIOLOGY

2.1 National Context

2.1.1 The nature of these conditions

Respiratory disease is a major cause of morbidity and mortality in the UK. Obstructive respiratory diseases, such as Chronic Obstructive Pulmonary Disease (COPD) and asthma, have received a particular focus in national and local policy due to the marked impacts upon length and quality of life they cause.

Asthma is a chronic disease that is characterised by bronchospasm and inflammation. It is unclear what the causes of asthma are, though risk factors associated with it include tobacco smoke, environmental (air) pollution, animal dander, and allergens such as pollen. In poorly controlled asthma, airway remodelling may occur, which can contribute to breathing difficulties and disability in later life. As airway remodelling may begin in children with asthma¹, there could be importance in ensuring good asthma management from a young age.

COPD is a disease that is characterised by persistent narrowing of the airways. It is caused by irritants in the airways, which lead to inflammation of the epithelium; thus causing an obstruction to the delivery and removal of gases to and from the alveoli. It is an under-diagnosed, life-threatening lung disease that interferes with normal breathing and is not fully reversible². In the UK, the overwhelming cause of COPD is the smoking of tobacco, though once disease is present, environmental irritants can also aggravate it.

Both diseases affect the health and wellbeing of the population, with COPD in particular leading to economic losses due to inability to work, early retirement, and death³. There is an established link between COPD and deprivation; Birmingham and Sandwell have a very high proportion and number of people living in relative deprivation compared to England overall.

2.1.2 The scale of these conditions nationally

Respiratory diseases accounted for 14% of all deaths in the UK in 2011⁴; this rises to 20% when cancers of the respiratory system are taken into account. COPD causes approximately a third of deaths due to respiratory disease. Only cancers and cardiovascular disease cause more deaths in the UK.

COPD is also ranked as the 7th highest contributor of Years Lived with Disability (YLD) in the UK⁵. 4-5% of adults self-report having been told by a doctor that they have COPD, or the related conditions of chronic bronchitis or emphysema⁶. Around 9-10% of adults have experienced symptoms or are treated for asthma in a 12 month period⁶; in children, 11% of boys and 8% of girls experience asthmatic symptoms over a 12 month period⁶.

Underdiagnosis of COPD has been reported in Europe⁷ and the UK⁸. The evidence suggests urban areas have marked underdiagnosis rates compared to more rural settings, though there is a degree of underdiagnosis in all areas. This means that the statistics used in this document may underestimate the true prevalence in local CCGs and the UK. This is also why estimates of prevalence can vary depending on the source used. Evidence from the UK suggests that for every 2 people diagnosed with COPD, there are 3 more people that remain undiagnosed⁸.

The quality of life (QoL) of people with COPD is negatively correlated with the severity of the condition, with QoL scores found to be lower than 0.8 at all severities⁹ (where 1= perfect health and 0= death). There is therefore likely to be benefit in not only preventing people from getting COPD, but also of preventing deterioration once it is diagnosed.

2.2 Risk Factors

The single largest risk factor for COPD is tobacco use; approximately 50% of COPD is thought to be directly caused by smoking¹⁰. The smoking rates in Birmingham, Sandwell and Solihull are different: Solihull is significantly lower than England, Birmingham is similar to England, and Sandwell is higher than England overall¹¹. The Chief Medical Officers Report for 2012 went as far to say that “The most effective preventative approach for smokers is to encourage smoking cessation”¹². In particular, a smoking history of 20 or more Pack-Years is important as a risk factor for COPD¹³.

Other risk factors include:

- Poor indoor ventilation
- Airborne pollution
- Occupational exposure to chemicals and dusts
- Alpha-1 antitrypsin deficiency (particularly for those younger than 45)

The above risks, however, are less important than tobacco in developed settings such as the UK¹⁴. These risk factors, along with tobacco use, are heavily associated with socio-economic deprivation (including low income / unemployment, fuel poverty, quality of green spaces, quality of housing). Other factors that are linked to COPD include:

- Foetal under-nutrition
- Maternal smoking
- Lower Respiratory Tract Infections (LRTIs) as an infant
- Nutrition
- Low Body Mass Index (BMI)
- Asthma

Asthma is known to be associated with¹⁵:

- Family history of asthma or other related allergic conditions (known as atopic conditions, including food allergies)
- Having bronchiolitis as a child
- Exposure to tobacco smoke as a child, particularly if the mother smoked during pregnancy
- Premature birth (especially if child needed a ventilator)
- A low birth weight (less than 2kg)

Some of these are interlinked – tobacco smoke exposure is a known cause of low birth weight and bronchiolitis. Focusing on reducing smoking in parents is therefore important. It is also believed that children that are breastfed tend to be diagnosed with asthma less than those not breastfed¹⁶.

Environmental exposures such as pet dander and dust may also contribute, though these may aggravate asthma rather than cause it. There are theories that suggest that mould or damp in houses can contribute to

asthma in children, though this has not been proven conclusively. There is little other definitive knowledge about reducing the incidence of asthma.

2.3 COPD

2.3.1 Prevalence of COPD

The crude prevalence of COPD (using QOF) in the 4 CCGs can be seen in Figure 1. There appear to be some differences between the CCGs, with BSC having a lower prevalence and Solihull a higher prevalence, when compared to the overall Cluster average. As the data here has not been age-standardised, and the likelihood that there are many undiagnosed people not on the QOF register, this suggests that differences drawn between the CCGs may be inappropriate. It is also not appropriate to link current risk factors to the prevalence, as many, if not most, of the people recorded as having COPD may have been exposed over a significant time period, going back many years. Population movement also means that risk exposures could have taken place in other localities.

A different model, published in 2011 and based on data from the 2001 Health Survey for England, suggests the prevalence of COPD by Local Authority. This suggests that in persons older than 15, the prevalence is 4.56% in Birmingham, 5.09% in Sandwell, and 4.33% in Solihull. This underlines the lack of clarity in measuring prevalence nationally and locally, and the belief that most people with COPD are not diagnosed.

Table 1 shows prevalence (using QOF) in each of the Local Commissioning Networks (LCNs).

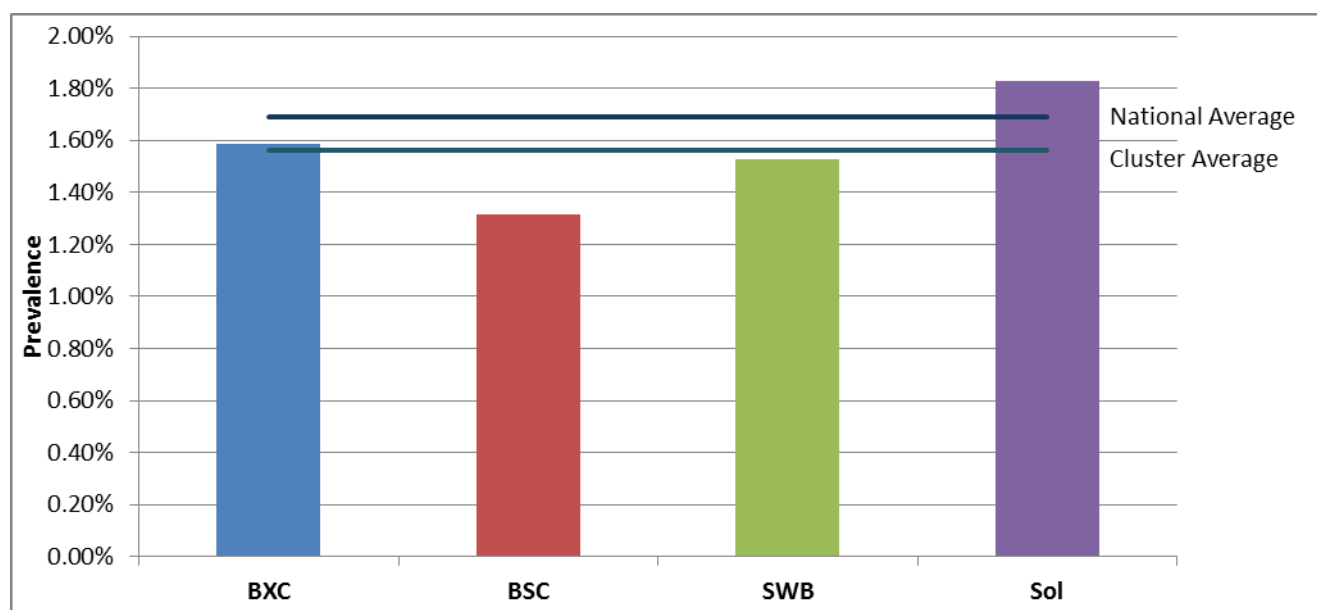


FIGURE 1 – PREVALENCE OF COPD IN 2011/12, BY CCG (SOURCE: QOF)

CCG	Local Commissioning Network	Prevalence (%)
Birmingham CrossCity	BSA	1.6
	East Bham	2.0
	Edgbaston	0.9
	Hall Green	1.8
	Kingstanding & Oscott	2.2
	North East	1.4
	Northfield	2.1
	South Bham	2.0
	Sutton Coldfield, Castle Vale & Shard End	1.4
	Washwood Heath	0.8
	Additional Allocated Practices	1.6
Birmingham South Central	Central	0.8
	Edgbaston	1.2
	Kings Norton	1.9
	Northfield	1.9
	Pershore	1.6
Sandwell & West Birmingham	Black Country	2.3
	Healthworks	1.5
	ICOF	0.8
	Pioneers 4 Health	1.0
	Sandwell Health Alliance	1.8
Solihull	Sirius	1.5
	Solis	2.7

TABLE 1 – PREVALENCE OF COPD IN EACH LCN (SOURCE: QOF)

The data above can be broken down further, by practice, and can be seen in Figure 2. This type of data display, a 'Statistical Process Chart', shows the proportion of patients with asthma in each practice, by CCG. The horizontal line shows the average across the cluster, with around 95% of practices expected to fall within the 2 standard deviation line, and 99.7% within 3 standard deviations. This means if all else was equal, 1 in 500 practices would be expected outside the 3 s.f. line. Clearly, there are many practices outside the limits on the chart – this suggests that all things are not equal, and that there are differences between practices (clinical care, population demographics to name two) that can partly explain this.

Very few practices have a higher than expected number of COPD patients across the 4 CCGs – this emphasises the underdiagnosis of the condition generally.

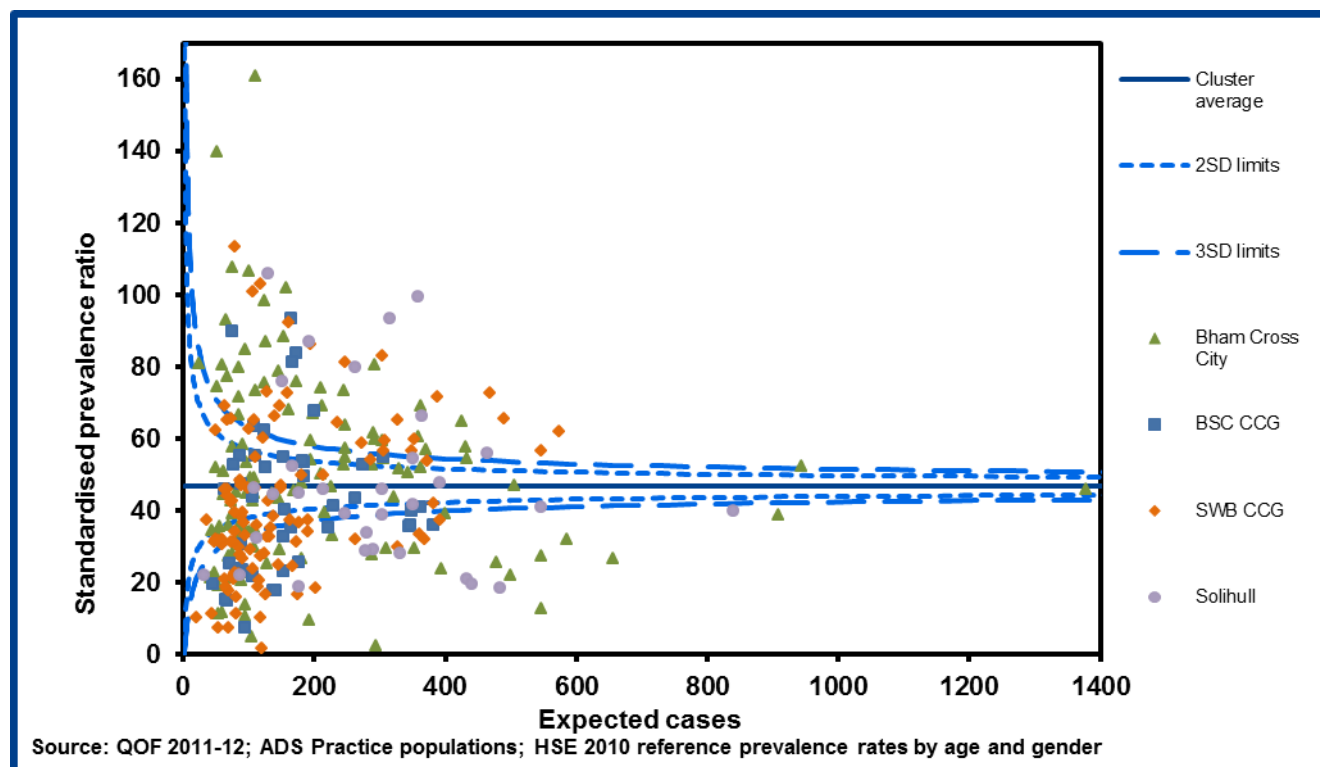


FIGURE 2 – RATIO OF QOF PREVALENCE TO EXPECTED PREVALENCE FOR COPD FOR BIRMINGHAM, SANDWELL AND SOLIHULL PRACTICES (ADJUSTED FOR AGE AND GENDER)

2.3.2 Admissions due to COPD

COPD may require admission to hospital if a severe exacerbation of symptoms occurs. Admission may also be appropriate should co-morbidities (which are very common in people with COPD) such as acute onset heart failure mean it is unsafe to remain treated in the community. In addition to this, should a clinician seeing the patient feel they are unable to cope at home due to any reason, hospital may be considered a safer option for the patient.

It should be remembered that if the proportion of people with COPD recognised in the community increases, admissions recorded as being due to COPD may rise. This would be despite the fact that the actual number of people with the disease would remain the same. Over time, early diagnosis and management may lead to a fall in admissions due to better long-term disease management. Artefacts in the data such as this should be considered prior to attempting to ascribe meaningful reasons for apparent changes or trends.

Figure 3 shows the admission rate for COPD per 100,000 population of each CCG, over the past 3 financial years available. The data in Figure 3 are standardised for each population. Solihull and SWB appear to have a significantly lower admission rate over time, compared to BXC and BSC. It is not clear at this stage whether this difference is due to:

- Differences in care of people with COPD between populations
- Differences in access to secondary care
- Underlying differences in the demographics of the populations (e.g. Solihull generally more affluent, White, educated)
- None of or a combination of the above

Solihull has a more affluent population with historically lower smoking rates, and SWB have a community respiratory service – both may be the drivers of lower admission rates, though the data can only show and not necessarily explain differences.

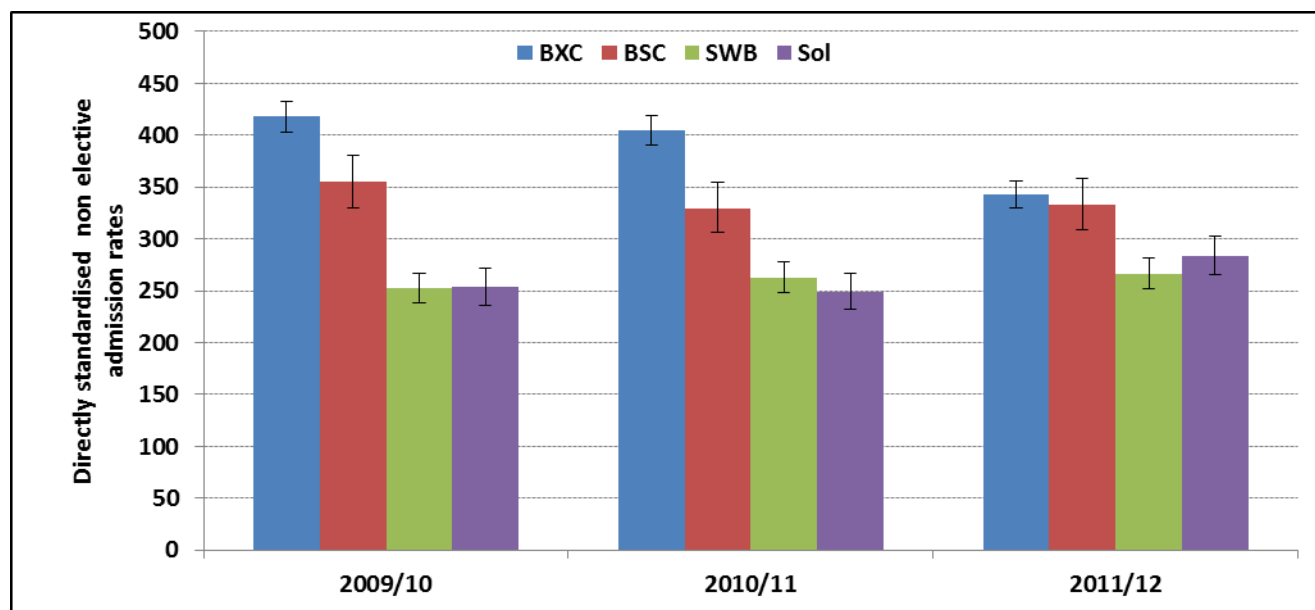


FIGURE 3 – DIRECTLY STANDARDISED ADMISSION RATE PER 100,000 POPULATION (ALL AGE) FOR COPD, BY YEAR, BY CCG

The rate of admissions for COPD is linked to the wider determinants of health, as seen in Figure 4. There is a moderately strong relationship between the Standardised Admission Rate (SAR) and the level of income deprivation of an area. Income deprivation is itself likely to be a proxy of other life circumstances (such as unemployment, quality of housing, quality of air, likelihood of smoking). The Figure shows that Sandwell and Birmingham are amongst the most income-deprived areas in the country, with a correspondingly higher SAR. Solihull has a better score and a lower admission rate than these. This implies that the SAR could be reduced over time by reducing income deprivation – this would likely take effect over the longer term, as behaviours linked to income deprivation are unlikely to change immediately. This is true for a number of conditions, though is not as markedly seen in asthma.

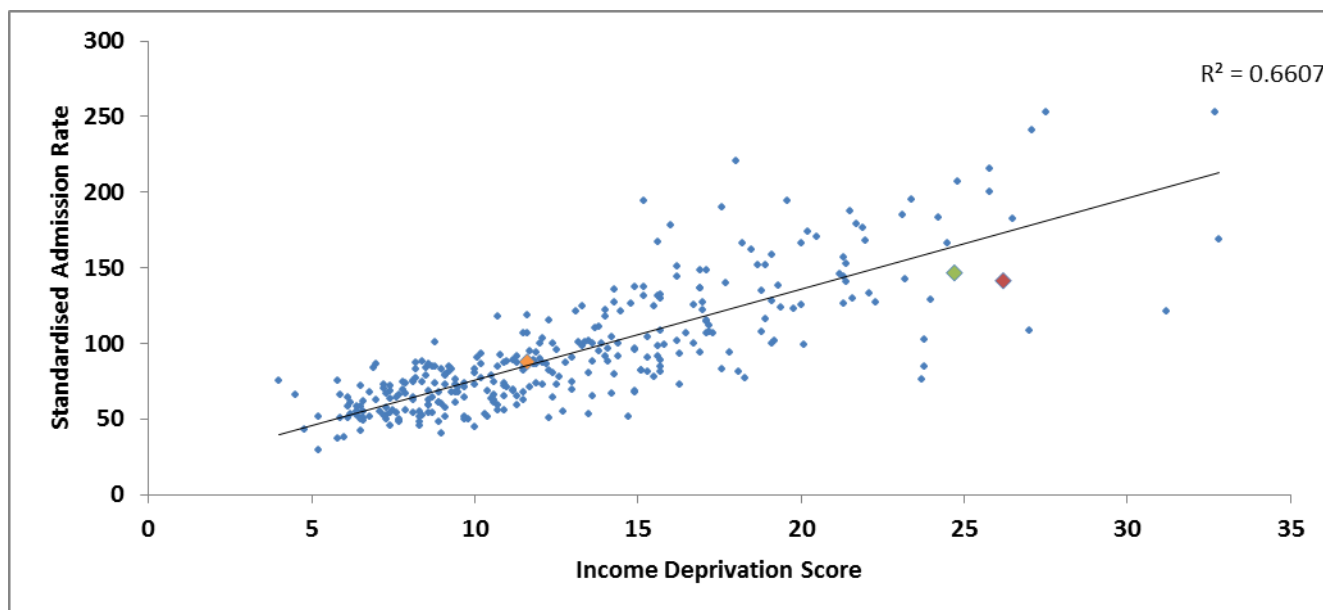


FIGURE 4 – STANDARDISED ADMISSION RATE FOR COPD IN LOCAL AUTHORITIES AGAINST INCOME DEPRIVATION (SOLIHULL ORANGE; BIRMINGHAM RED; SANDWELL GREEN)

The link between admissions and deprivation is also demonstrated at a local level, with a clear trend of lower admission rates as level of area affluence increases, particularly seen in Birmingham. The trend is less apparent in Solihull, where an increase occurs in the middle quintile. There remains a clear difference between the least and most affluent, however. Data for Sandwell was not available at the time of writing.

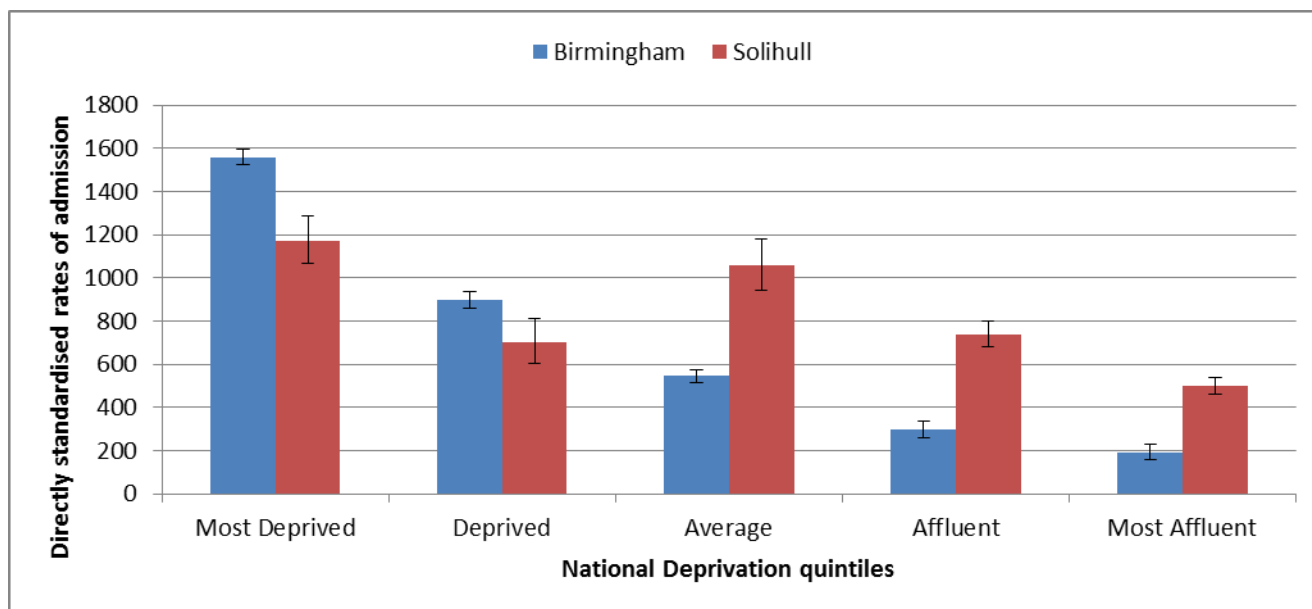


FIGURE 5 – STANDARDISED ADMISSION RATE FOR COPD IN LOCAL AUTHORITIES AGAINST NATIONAL DEPRIVATION QUINTILES (BIRMINGHAM & SOLIHULL ONLY)

The admission rate for COPD by ethnicity is seen in Figure 6. There are clear statistical differences in the rates between the White group and all other ethnicities. An ‘Other’ group which included relatively small numbers has been removed from this graph. In the absence of accurate data regarding prevalence by ethnicity,

interpreting this data is difficult. The higher rate in White people may simply be a reflection of a higher prevalence in this group. There is evidence of a higher prevalence of COPD in White groups, compared to other groups, in the UK¹⁷, though this was based in a particularly deprived part of London and may not be generalisable to the local situation. It is known that the White populations of the Local Authorities are older than those of ethnic minority backgrounds, and are therefore at higher risk of having COPD, though standardisation should have adjusted for this to some extent.

If it is assumed that prevalence is approximately equal between all ethnicities, the admission rates may be linked to issues of access to secondary care – it has been found previously that ethnic minorities access secondary care less than the White ethnic group¹⁸. This may not be necessarily true for respiratory diseases such as COPD, however, so may not be the primary reason; the data in this research is also 10-15 years old.

Should the true prevalence of COPD actually be higher in the White population compared to other ethnic groups, then the data in Figure 6 becomes more intuitive. Of particular interest would be the split of admissions by gender; there may be a stronger female:male difference in e.g. Asian populations compared to the White population (due to e.g. marked differences in smoking prevalence); this data is unavailable at this level.

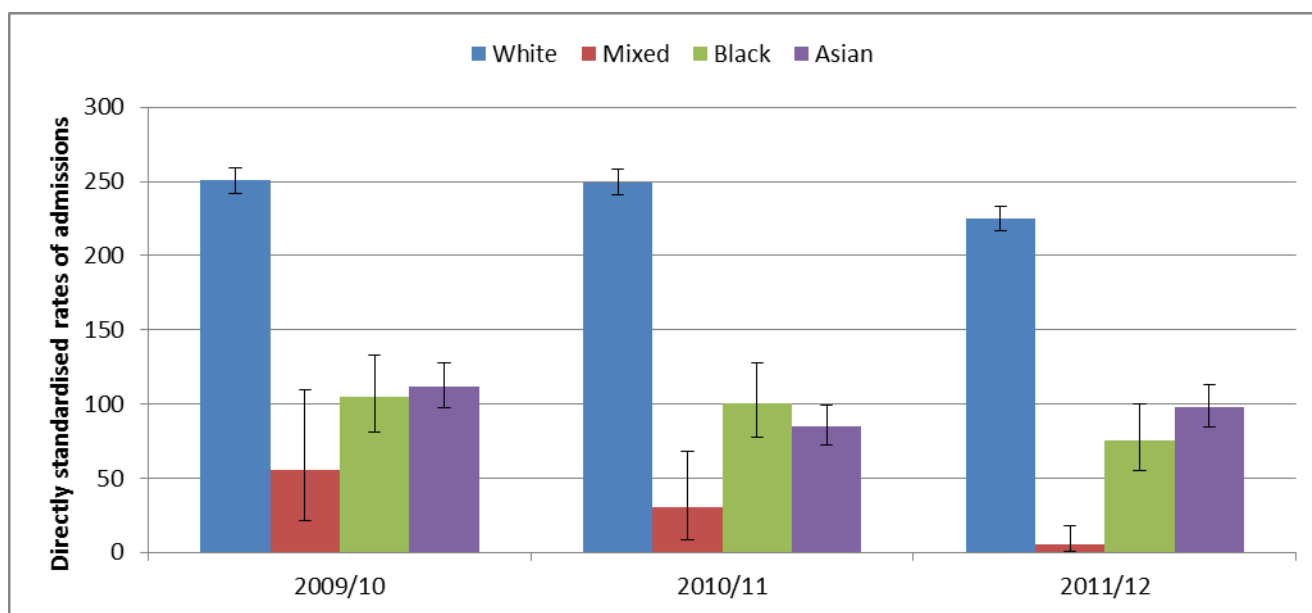


FIGURE 6 – DIRECTLY AGE STANDARDISED ADMISSION RATE FOR COPD IN SANDWELL, BIRMINGHAM, SOLIHULL, BY ETHNICITY, BY YEAR

Figure 7 shows the average length of stay in each of the CCGs from 2009-2012. Practices have been allocated to a CCG retrospectively to enable this analysis. There appears to be a significant fall in the average number of days in 3 of the 4 CCGs. There is a counter-trend seen in Solihull, however, with an increase in average length of stay in the same time period. The reasons behind this are unclear. Indeed, the reasons behind what appear to be quite considerable changes are unclear. A partial update in the NICE guidance for COPD was published in June 2010, though intuitively this seems unlikely to be the main driver of such a change. A change in focus by secondary care providers to discharge patients earlier could also be behind the reduction in 3 of the CCGs. This could be related to the availability (or lack of):

- Hospital at home / facilitated discharge schemes available to each Trust
- Dedicated respiratory ward advanced discharge planning

- Community respiratory services
- Changes in the inpatient tariff

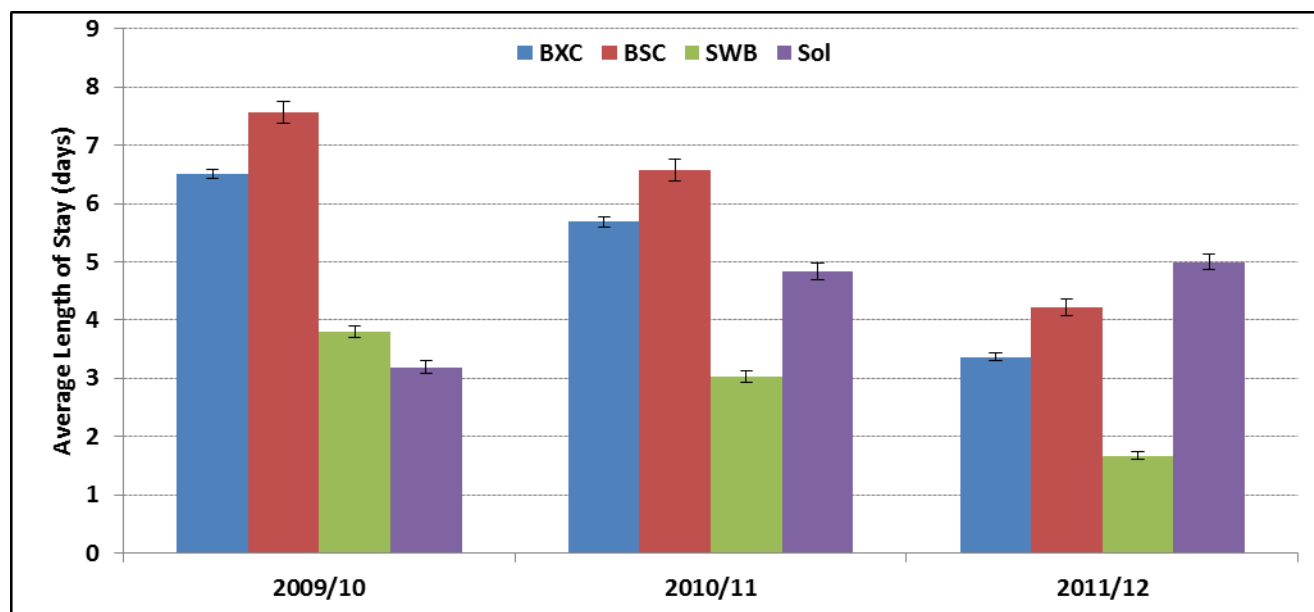


FIGURE 7 – MEAN AVERAGE LENGTH OF STAY IN DAYS FOR COPD, BY CCG, BY YEAR

Figure 8 shows the proportion of admissions broken into length of stay. In the 3 year period, 4943 admissions were recorded as lasting zero days. A zero-day admission may imply an unnecessary admission – in particular exacerbations that may have been dealt with in primary care or in the A&E department without an admission being made. It is not possible to determine from this data the main reasons behind these zero-day admissions. From a primary care perspective it could imply over-referral of patients that could have been treated outside of hospital. However, from the hospital perspective, the drive in recent years for all A&E attenders to have a definitive management plan within 4 hours may mean that admission is ‘artificially’ decided upon for such patients, to prevent impact upon ‘4-hour breach’ statistics. It is not possible to determine the actual reasons behind the data without a case-note review.

What is clear is that the costs of such admissions to the local health economy, in terms of time and finance, are considerable. Nationally, approximately 10% of all admissions are zero-day – this compares favourably to the 27% figure seen here locally. The tariff for <1 day admissions with uncomplicated COPD in 2009 was £532 (now £560). If the number of admissions were reduced to the national level of 10% (around 1800 admissions locally), this may have saved approximately £1.6m in admission costs over the 3 years locally.

The proportions appear similar for all CCGs except in one respect – SWB has a 15 percentage point higher proportion in the 1-day group, and a lower proportion in the 7+ days groups, than the other CCGs. This may mean there is a particular drive to reduce the overall length of stay in all patients, such that the curve for SWB is ‘shifted left’. One interpretation of this may be that the hospitals that these patients are admitted to (likely to be mainly City and Sandwell Hospitals) are able to discharge patients a little sooner than hospitals serving patients of other CCGs. Whether this is due to early supported discharge programmes, confidence in community teams, or other reasons is unclear from this data.

The particularly stark difference seen in SWB in the 7-13 and 14+ groups probably explain the very low mean average length of stay seen in Figure 7, as even a few admissions lasting an exceptionally long time can skew mean averages greatly.

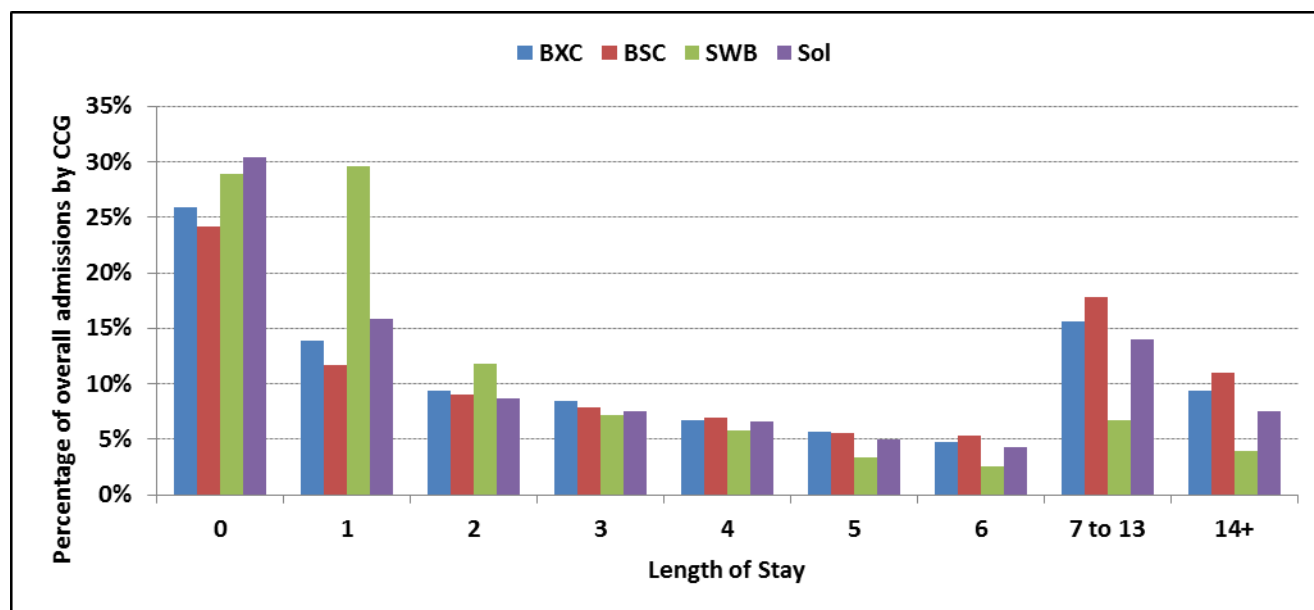


FIGURE 8 – PROPORTION OF ADMISSIONS FOR COPD FOR PATIENT, BY CCG, BY LENGTH OF STAY IN DAYS (APRIL 2009 – MARCH 2012)

Readmissions (defined here as a patient being readmitted to hospital for COPD within a year of being discharged) are problematic; they may suggest that the presenting complaint has not been adequately managed, either in hospital or in the community post-discharge. This results in wasted resources – both financial and human – to the detriment of other patients.

Figure 9 shows that around 60% of admissions for COPD are in fact readmissions, with the SWB population having a lower proportion (around 40%). This may reflect the provision of community-based respiratory teams delivered by Sandwell/BCHCT, or use of hospital at home schemes, though further data is required before any causal link can be established. Overall, the proportions appear to be similar for the past 3 years running. The consistency between the 4 CCGs in these respects – with 3 different hospital Trusts taking the majority of the patients – may mean that this is a system-wide issue rather than just local. This is confirmed by the NHS Improvement report published last year¹⁹, which suggested a 31% readmission rate for COPD nationally (readmissions in this report defined as within 28 days). This report also suggests methods to try and reduce readmissions and poorer outcomes for those admitted with COPD.

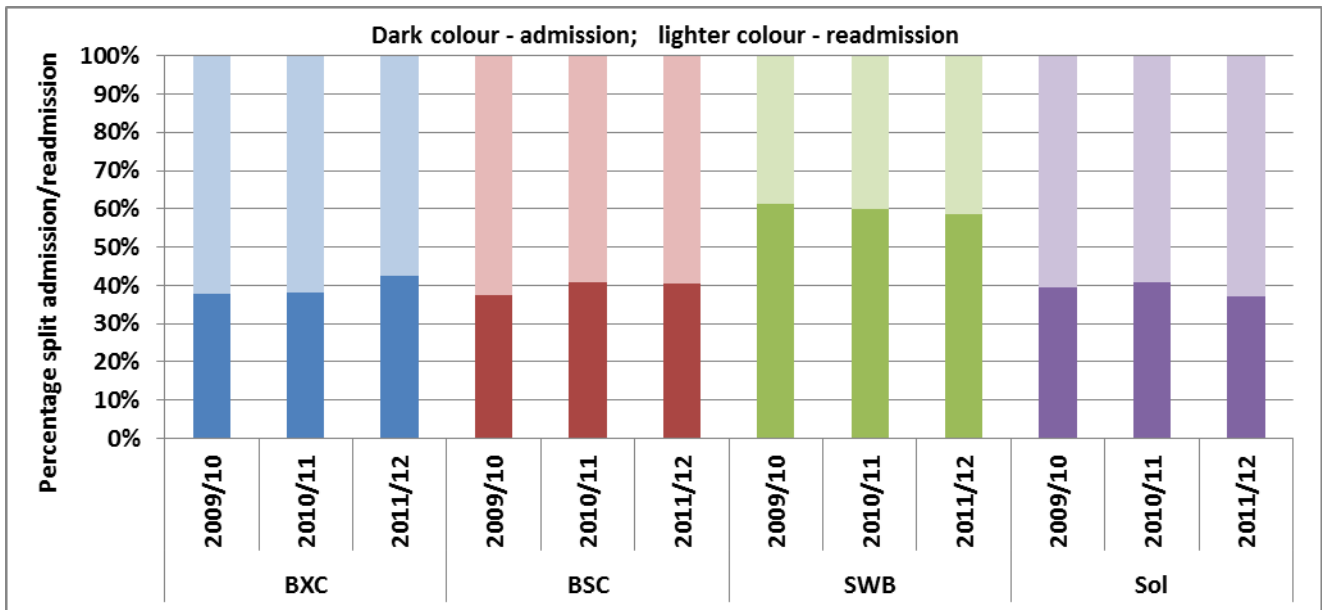


FIGURE 9 – PROPORTION OF ADMISSIONS AND READMISSIONS FOR COPD, BY CCG

2.3.3 Mortality due to COPD

The directly standardised death rate in Birmingham and Sandwell, due to COPD, was consistently higher than England and the West Midlands over the 5-year period 2006-10; Solihull was consistently lower (Figure 10). The overall death rate was broadly unchanged in the West Midlands and England during this 5-year period.

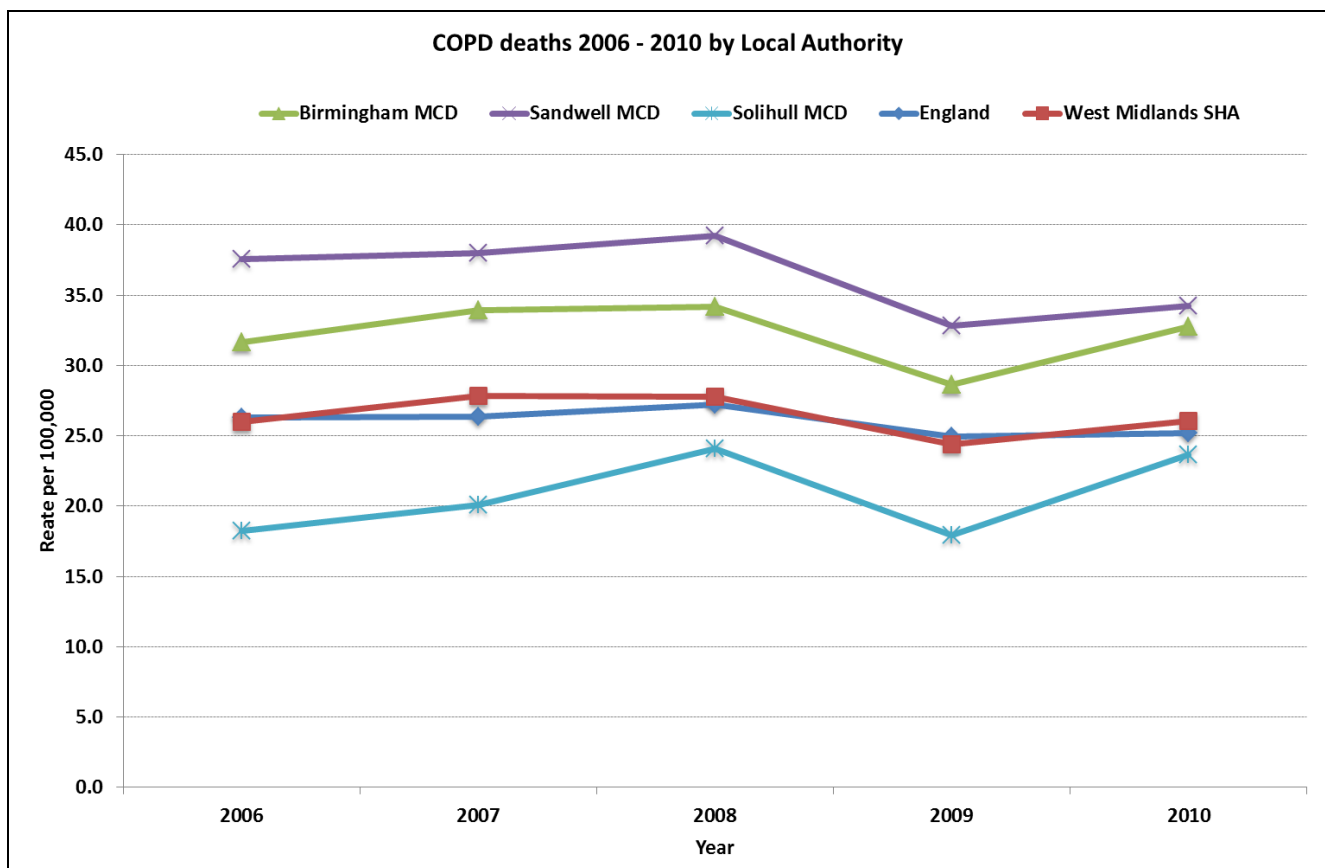


FIGURE 10 – DIRECTLY STANDARDISED DEATH RATE FOR COPD, BY LOCAL AUTHORITY, BY YEAR

The death rates for COPD in the same Local Authorities (LAs) can be seen in Figure 11. In Birmingham, there is an inverse association seen, where the more affluent the sub-population, the lower the death rate is. This lines up similarly to the admission rate in Birmingham. A trend is less evident in Sandwell; this is likely due to the fact that approximately 98% of the population of Sandwell live in the 3 most deprived quintiles; the numbers of deaths and populations in the 2 most affluent groups are small. Indeed, there are no areas at all in Sandwell that are classed as 'Most Affluent'.

A trend may be apparent in Solihull, though the wider confidence intervals mean this cannot be stated with certainty.

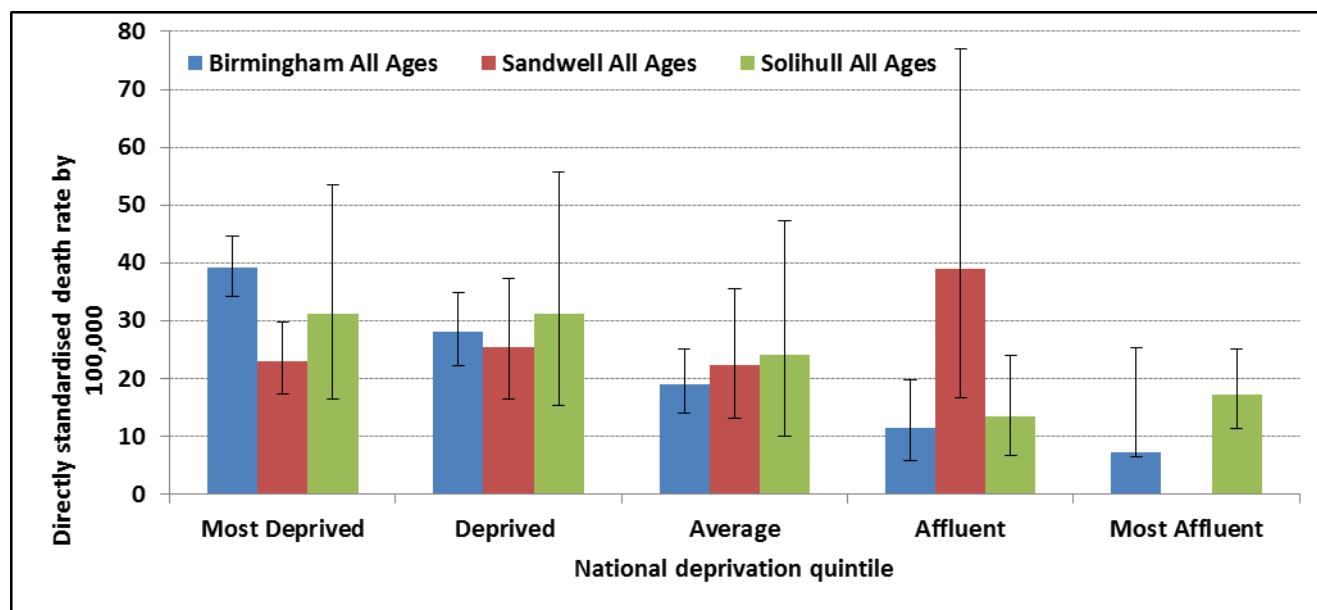


FIGURE 11 – DIRECTLY STANDARDISED DEATH RATE DUE TO COPD (2012), BY LOCAL AUTHORITY, BY IMD QUINTILE (95% CI SHOWN)

Table 2 shows the number of deaths due to COPD by year and age band in each of the CCGs, with Figure 12 showing the proportion of deaths in each CCG at each age band. Deaths are only included here if they are recorded as the primary cause of death (i.e. Part I on the death certificate) – co morbidities are discussed shortly. This demonstrates further that whilst COPD predominantly affects those aged over 75, there are a sizeable number of deaths in the younger groups; as COPD is a chronic disease, this will have been preceded by illness and disability for a number of years in many patients. The proportion of deaths by age group appear to be similar across the CCGs.

It should be remembered that death certification may not be a completely accurate process, particularly in persons with multiple co-morbidities. COPD may be the underlying cause of death, which may be recorded as e.g. 'pneumonia'. Nevertheless, this is the most accurate data available at a local level.

	BXC			BSC			SWB			Sol		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
<45	0	<5	<5	0	<5	0	<5	0	0	0	0	0
45-54	5	<5	<54	<5	<5	<5	<5	<5	5	<5	0	0
55-64	29	21	26	8	<5	<5	17	15	12	9	<5	9
65-74	62	61	66	11	22	19	40	31	34	20	26	23
75-84	143	100	112	32	26	20	62	67	74	34	32	29
85+	83	83	85	19	12	22	66	50	61	33	26	29
Grand Total	322	269	295	71	66	65	191	165	186	97	88	90

TABLE 2 – NUMBER OF DEATHS DUE TO COPD 2010-2012, BY CCG, BY AGE CATEGORY (2012 DATA PROVISIONAL)

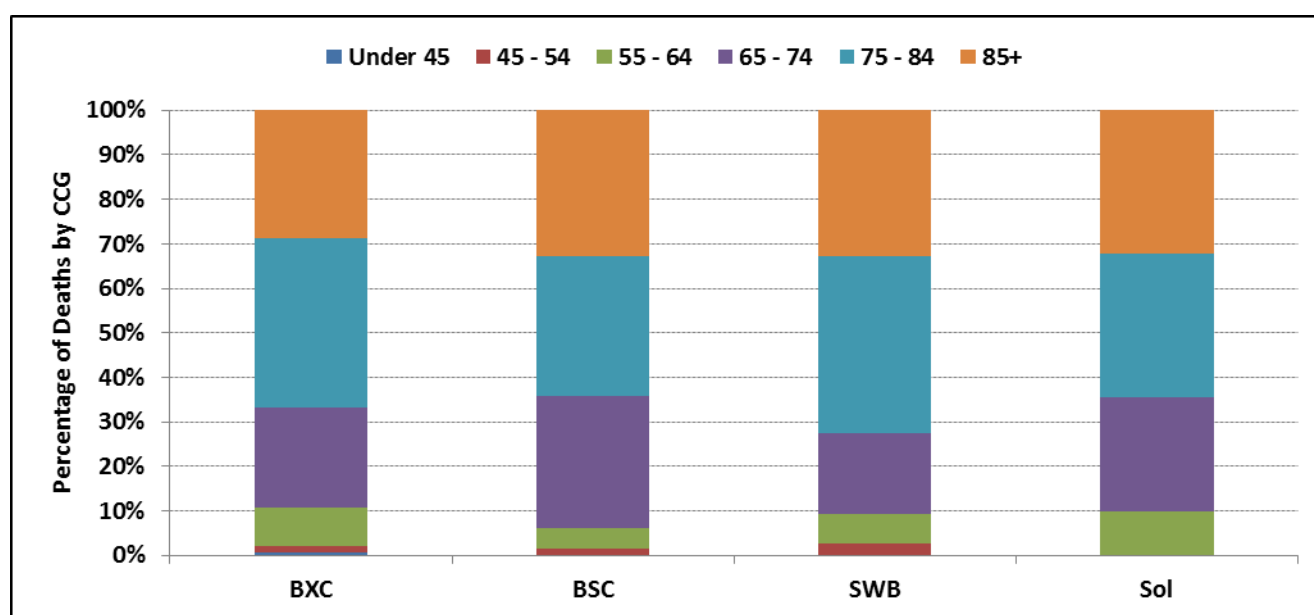


FIGURE 12 – PROPORTION OF DEATHS DUE TO COPD IN 2012, BY AGE CATEGORY AND CCG

In Birmingham, an exercise conducted within the Public Health last year department showed that COPD was one of the top 7 causes of Years of Life Lost (YLL) in those aged under-75. Sandwell has a similar deprivation and population profile to Birmingham²⁰, and may therefore be similar to Birmingham in this respect. Solihull has a generally more affluent population with differences also in age and ethnicity; these underlying differences to Birmingham and Sandwell are likely to indicate a different disease profile, though clearly there are differences in population at ward level locally.

Co-morbidities are very important in COPD – people with COPD have significantly more comorbidities than the general population, including heart disease and diabetes²¹. The number of deaths in the local CCGs that have COPD named on the death certificate as a contributor (Part 2 on the death certificate) to the primary cause of death is shown in Table 3. The caveat regarding the accuracies of such data remain, and are likely to be more pertinent to the recording of contributory causes than primary causes of death.

Over the 3-year period 2010-2012, of the 1950 deaths that had COPD as a contributory cause, circulatory diseases and neoplasms made up the majority. The much higher number seen here (1950 v 636 as primary

cause in same time period) suggests that deaths are being recorded such that people are dying with COPD, rather than from it. This distinction may not be clinically important if COPD is the underlying pathology leading to death (e.g. cause of terminal heart failure, infection, etc.)

Cause of death all ages	BXC	BSC	SWB	Sol	Grand Total
Bone	7	<5	<5		11
Certain infectious & parasitic diseases	14	9	10	6	39
Congenital	<5		<5	<5	5
Diseases of Skin & Subcutaneous tissue	<5		<5	<5	7
Diseases of the blood	<5		<5		5
Diseases of the circulatory system	310	95	245	101	751
Diseases of the digestive system	51	12	40	25	128
Diseases of the genitourinary system	19	5	10	6	40
Diseases of the nervous system	16	5	8	6	35
Endocrine, nutritional & metabolic diseases	10	<5	18	<5	35
External causes of morbidity and mortality	37	6	11	14	68
Mental and behavioural disorders	23	10	20	12	65
Neoplasms	273	69	201	94	637
Non-classified conditions	<5				1
Other respiratory diseases	54	9	33	26	122
Grand Total	824	226	603	296	1949

TABLE 3 – NUMBER OF DEATHS IN LOCALLY REGISTERED PATIENTS THAT HAD COPD NAMED ON THE DEATH CERTIFICATE AS A SECONDARY CAUSE OF DEATH (2010-2012, 2012 DATA PROVISIONAL)

2.4 Asthma

2.4.1 – Prevalence of asthma

The prevalence of asthma (using QOF) is higher than COPD, with a national value of 5.93% (Figure 13). All 4 local CCGs have a slightly higher prevalence than this. Table 4 shows the prevalence (from QOF data) of asthma in each LCN locally. There appears to be little variation between CCGs or LCNs (Figure 13).

To be included on the QOF asthma register, a person must also have received asthma medication in the past year. This is for patients of all ages, though a different QOF indicator records asthma in patients diagnosed after April 2006, aged 8 or older. It should be noted that the QOF register figures do not correlate with the Health Survey for England data, which suggests around 10% of the population have symptoms of asthma⁶. There is likely to be underreporting of asthma in the QOF data generally, as well as COPD.

It should also be noted that asthma may be divided into 'childhood asthma', and asthma that goes on to affect adults. Some childhood asthma dissipates with age, and the cohort of people that become asthmatic in adulthood tend to have more severe disease²². The figures shown here relate to all age asthma unless otherwise stated.

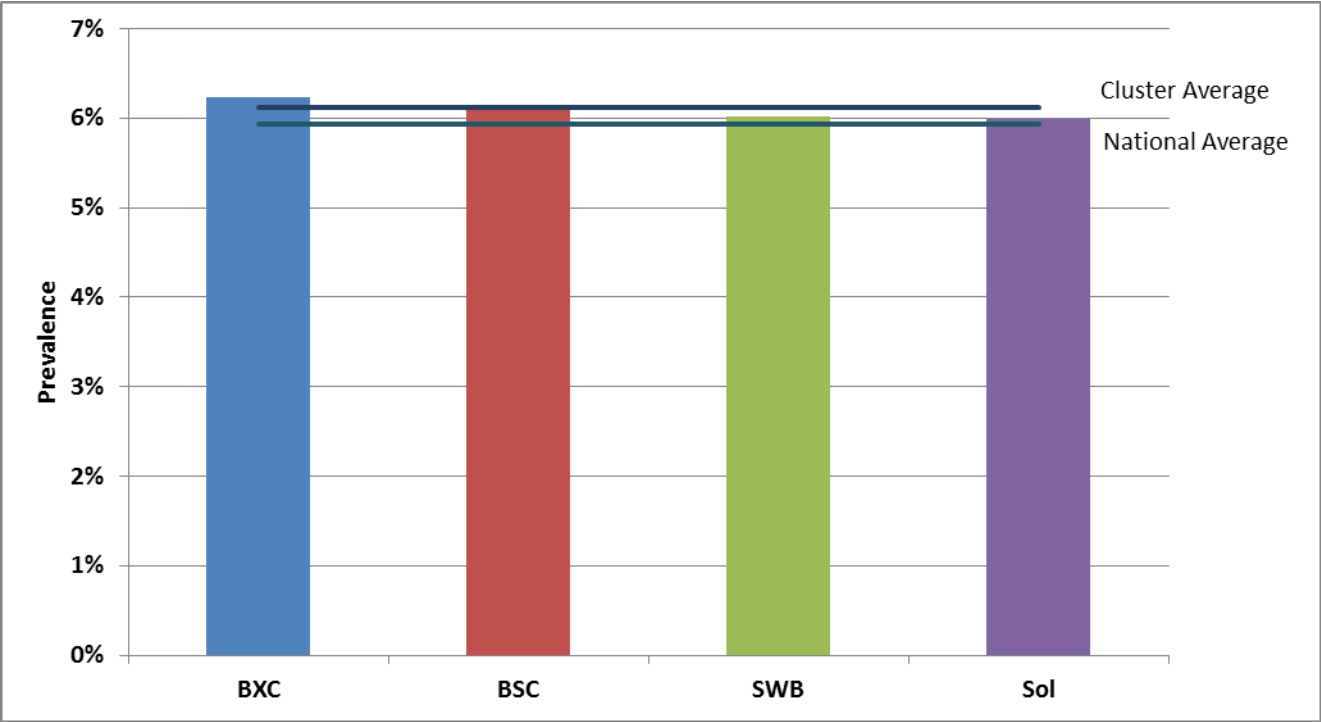


FIGURE 13 – PREVALENCE OF ASTHMA IN 2011/12, BY CCG (SOURCE: QOF)

CCG	Local Commissioning Network	Prevalence (%)
Birmingham CrossCity	BSA	6.9
	East Bham	6.1
	Edgbaston	5.2
	Hall Green	7.1
	Kingstanding & Oscott	6.1
	North East	5.9
	Northfield	6.8
	South Bham	6.1
	Sutton Coldfield, Castle Vale & Shard End	6.0
	Washwood Heath	5.6
	Additional Allocated Practices	6.5
Birmingham South Central	Central	6.3
	Edgbaston	5.4
	Kings Norton	6.6
	Northfield	5.7
	Pershore	6.5
Sandwell & West Birmingham	Black Country	6.7
	Healthworks	6.2
	ICOF	5.6
	Pioneers 4 Health	5.3
	Sandwell Health Alliance	5.9
Solihull	Sirius	5.9
	Solis	6.3

TABLE 4 – PREVALENCE OF ASTHMA IN EACH LCN (SOURCE: QOF)

Achievement of the Asthma 08 indicator on QOF (The percentage of patients aged eight and over diagnosed with asthma since April 2006 with measures of variability or reversibility; now renamed AST002) is seen in Figure 14. There are very few practices outside the wider control limits of 3 standard deviations. There are 4 practices that have a higher number of exceptions reported than the 3 standard deviation limit (graph not shown). This may indicate special cause variation, and could be used to highlight practices for review to determine any systematic reason for the difference.

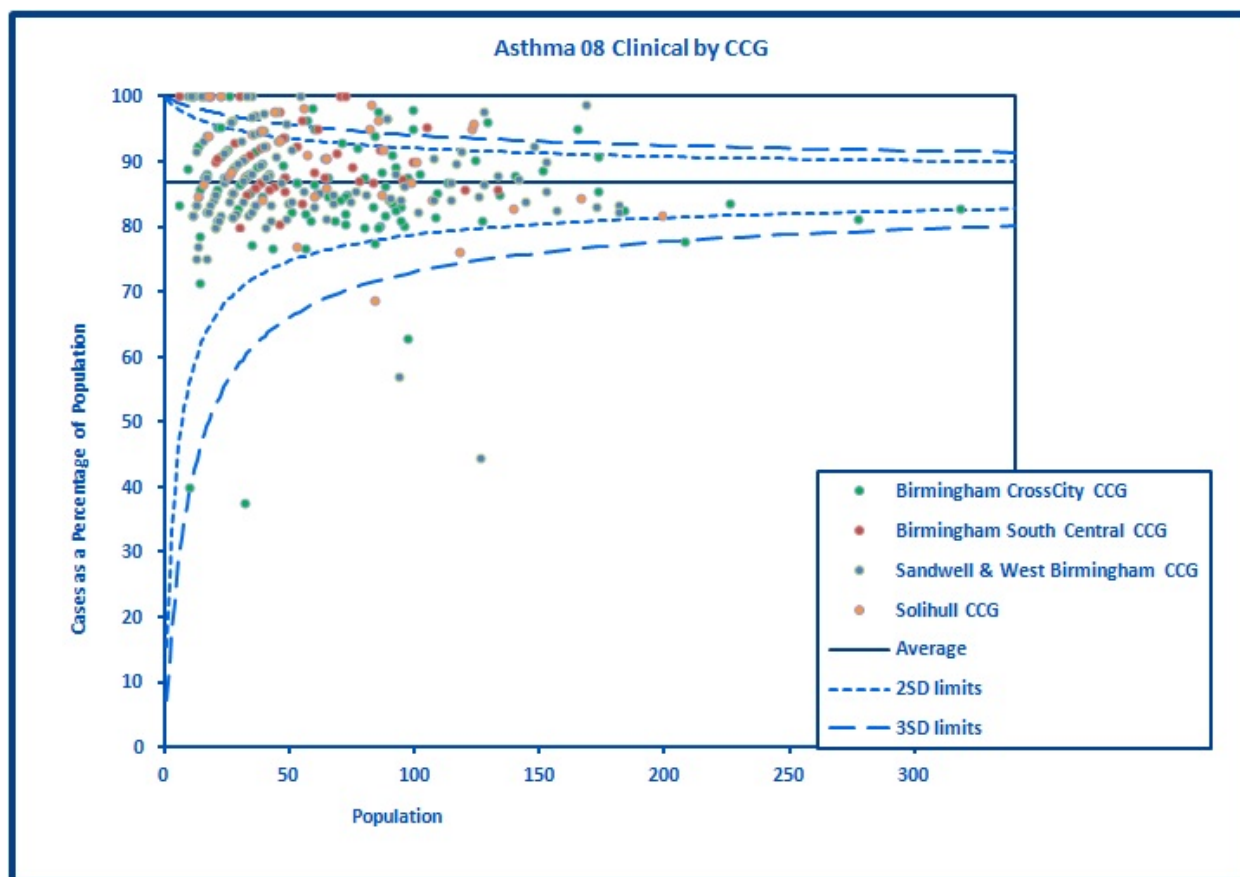


FIGURE 14 – ACHIEVEMENT OF ASTHMA 08 QOF INDICATOR (2011/12)

2.4.2 – Admissions due to asthma

The peak ages for admissions due to asthma are in childhood, up to the age of 10 (Figure 15) – this has been consistent for the past 4 years. It is known that children have a higher prevalence of asthma than adults; some children do not continue to have symptoms as they develop, and so cease to have the diagnosis. Higher admission rates for asthma may be a warning that disease control in primary care is not adequate. Ideally, all patients with asthma (including children) should have a personalised care plan in the community, which helps the patient control their disease. Knowing how to counteract worsening asthma prior to a full asthma attack can help reduce admissions, which are therefore ‘avoidable’ to some extent²³.

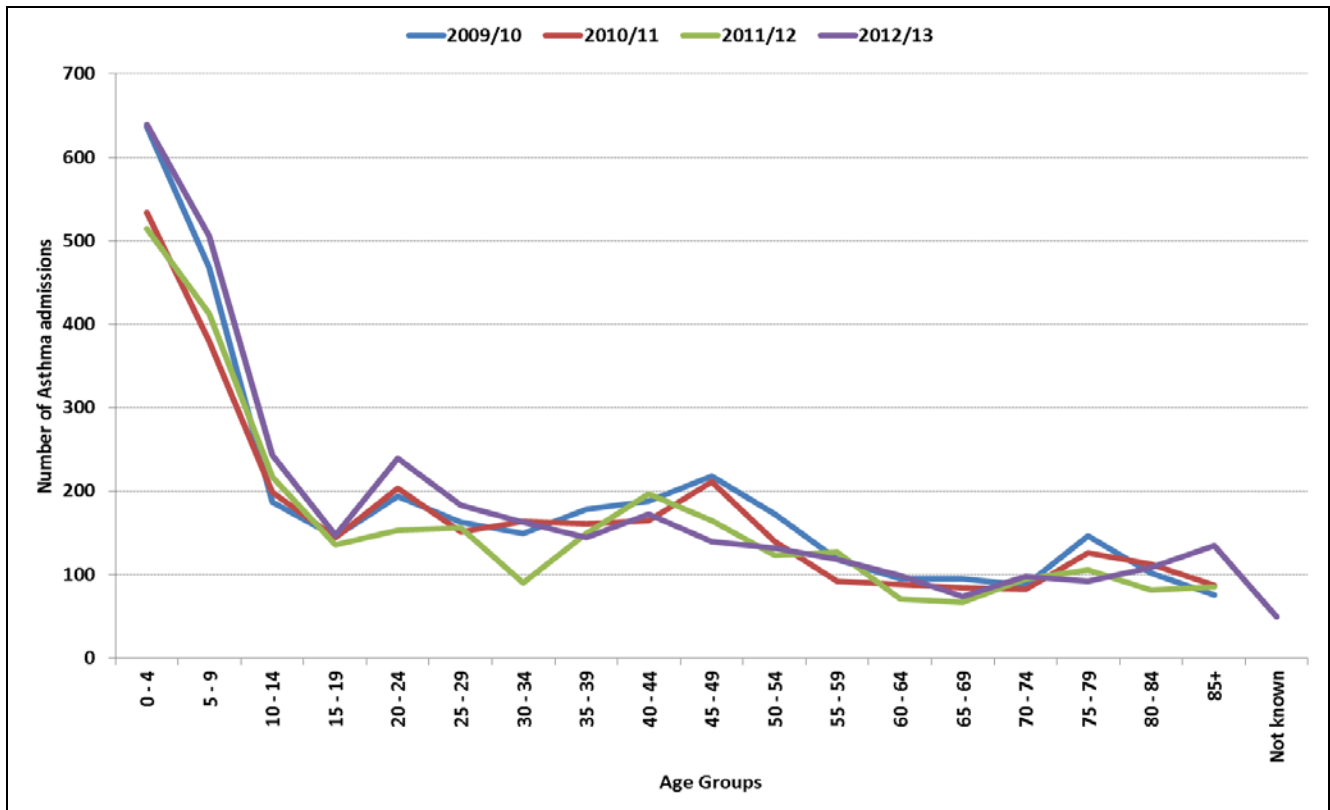


FIGURE 15 – NUMBER OF ADMISSIONS TO HOSPITAL FOR ASTHMA FOR ALL LOCAL CCGS, BY YEAR, BY AGE CATEGORY

Figure 16 shows the standardised admission rate for asthma by CCG. Both BXC and SWB appear to have static rates over the timeframe. BSC have reduced markedly over this time period from being clearly having the highest rate, to being similar to BXC and SWB. Solihull has consistently had a lower admission rate overall compared to the other CCGs. Again, this may be a reflection of the greater affluence in Solihull, though this relationship is not as strong as for COPD. It should be noted that age has been accounted for with the standardisation; other factors including deprivation, ethnicity, and a host of other factors including care provision, skills in the community, etc, have not been accounted for.

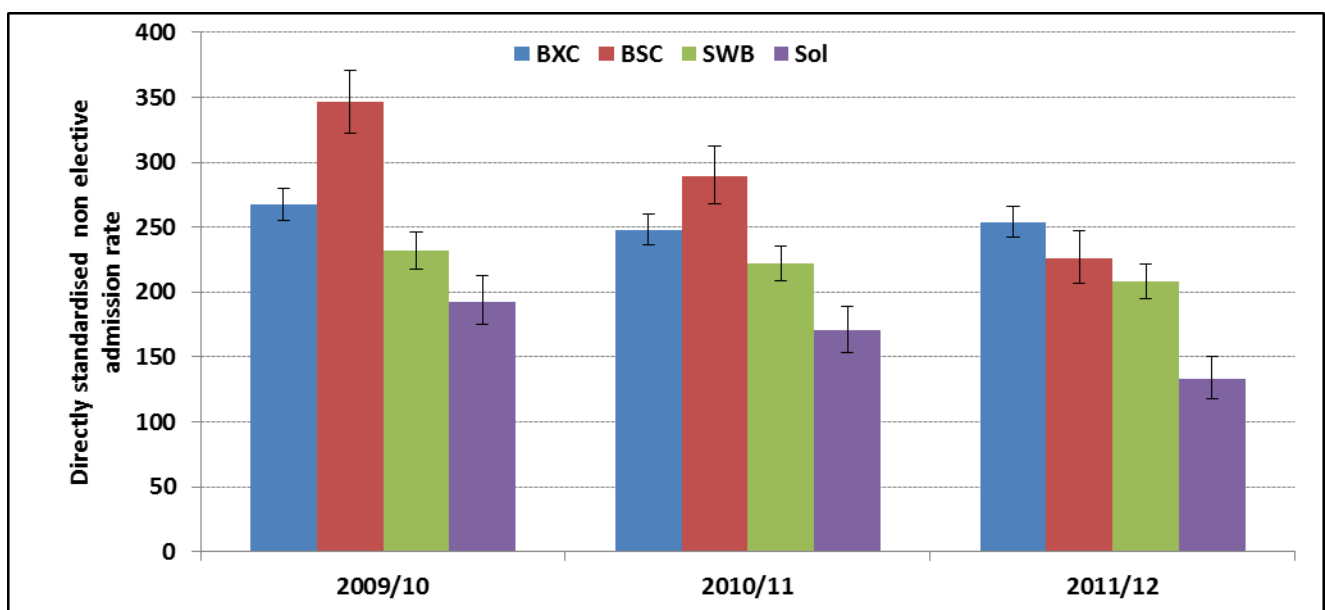


FIGURE 16 – DIRECTLY STANDARDISED ADMISSION RATE PER 100,000 POPULATION FOR ASTHMA, BY YEAR, BY CCG

Figure 17 shows the mean average length of stay in days for patients admitted for asthma, by CCG. There does not appear to be a consistent trend apparent across all CCGs. BSC and SWB had a significantly lower average length of stay in 2011/12 than in 2009/10. More telling data is seen in Figure 19 regarding length of stay.



FIGURE 17 – AVERAGE LENGTH OF STAY FOR ADMISSIONS DUE TO ASTHMA, BY CCG, BY YEAR

For the period April 2009 to March 2012, there were 3950 (34%) admissions that lasted less than 1 day (Figure 18). As with COPD, these admissions may be potentially avoidable, though again it is not possible to determine if this is mainly due to primary care, secondary care, or another reason entirely. The tariff for uncomplicated asthma admissions was £857 in 2009/10 (now £642). Even reducing zero-day admissions by half would reduce spend on admissions by around £1.7m over 3 years.

The BXC, BSC, SWB CCGs all appear to have similar profiles regarding length of stay; Solihull is notably different in that it has a spike in zero-day admissions compared to the others, with a corresponding drop in the proportion of admissions lasting 1-6 days. This can be interpreted in different ways:

- People registered within Solihull CCG are being referred / self-referring to hospital and being admitted unnecessarily, before being discharged the same day
- Admissions tend to be less severe and therefore can be discharged after a very short course of inpatient treatment, after appropriate admission
- There is a drive to discharge people with asthma exacerbations as soon as possible, which has pushed the graph 'left'

It is therefore difficult to determine if Solihull is performing 'worse' or 'better' than the other CCGs in this respect; however even if this is due to a push to reducing length of stay, there is likely to be a significant proportion of people admitted for zero days when this was not necessary.

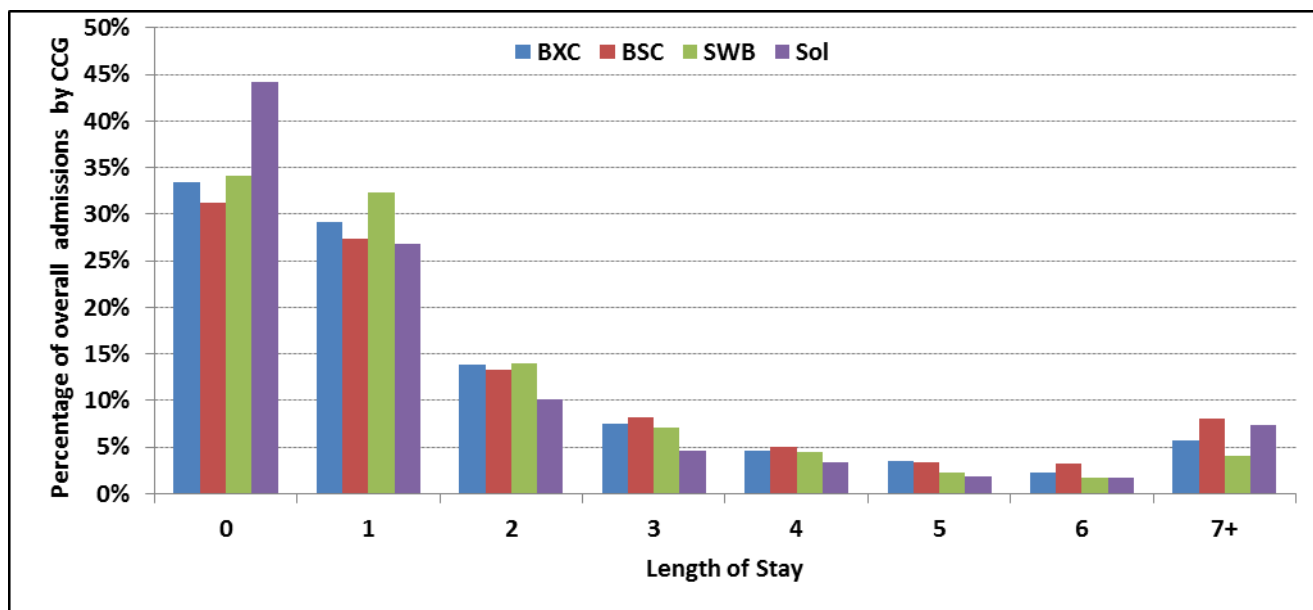


FIGURE 18 – PROPORTION OF ADMISSIONS FOR ASTHMA FOR PATIENTS, BY CCG, BY LENGTH OF STAY IN DAYS (APRIL 2009 – MARCH 2012)

The admission rate for asthma appears to be at least partly linked to the deprivation level of an area that a person lives in, seen in Figure 19. There appears to be a trend in both Birmingham and Solihull residents, where admission rates reduce when living in areas of increasing affluence. The trend in Solihull is much steeper than for Birmingham.

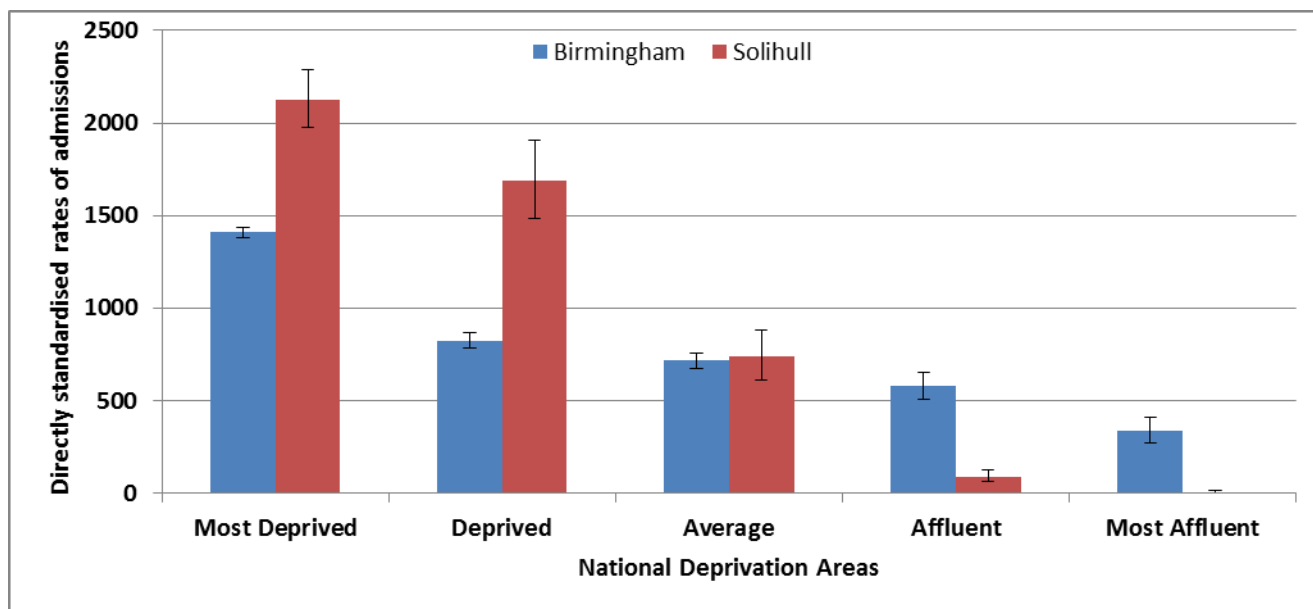


FIGURE 19 – STANDARDISED ADMISSION RATE FOR ASTHMA IN LOCAL AUTHORITIES AGAINST NATIONAL DEPRIVATION QUINTILES, APRIL 2009 – MARCH 2012 (BIRMINGHAM & SOLIHULL ONLY)

2.4.3 – Mortality due to asthma

Asthma has a higher prevalence than COPD, though conversely it has a much lower mortality rate. There were 123 deaths in the 4 CCGs in the period 2010-2012, with the majority being in those aged 75 and older. There

were, however, 25 deaths in the 3 years in people aged up to 64 – this represents a large burden of mortality, with considerable years of life lost for each person.

The number of deaths recorded in those aged 85 and older may be due to recording error; consensus from the working group suggested that at least some of these patients were likely to have had undiagnosed COPD or other respiratory conditions, rather than asthma.

It is known that nationally, the majority of excess seasonal (winter) deaths appear to be due to respiratory causes, with a high burden in the 85+ age group. Regardless of whether asthma or COPD was the actual true cause of death, this age group appears to be a good target for attempts to reduce the effects of cold weather (e.g. poorly insulated homes)

The National Review for Asthma Deaths (NRAD) is currently reviewing every asthma death in the UK, and believes that there were preventable factors in 90% of these. If this is true of the asthma deaths locally, there may be potential to reduce mortality locally.

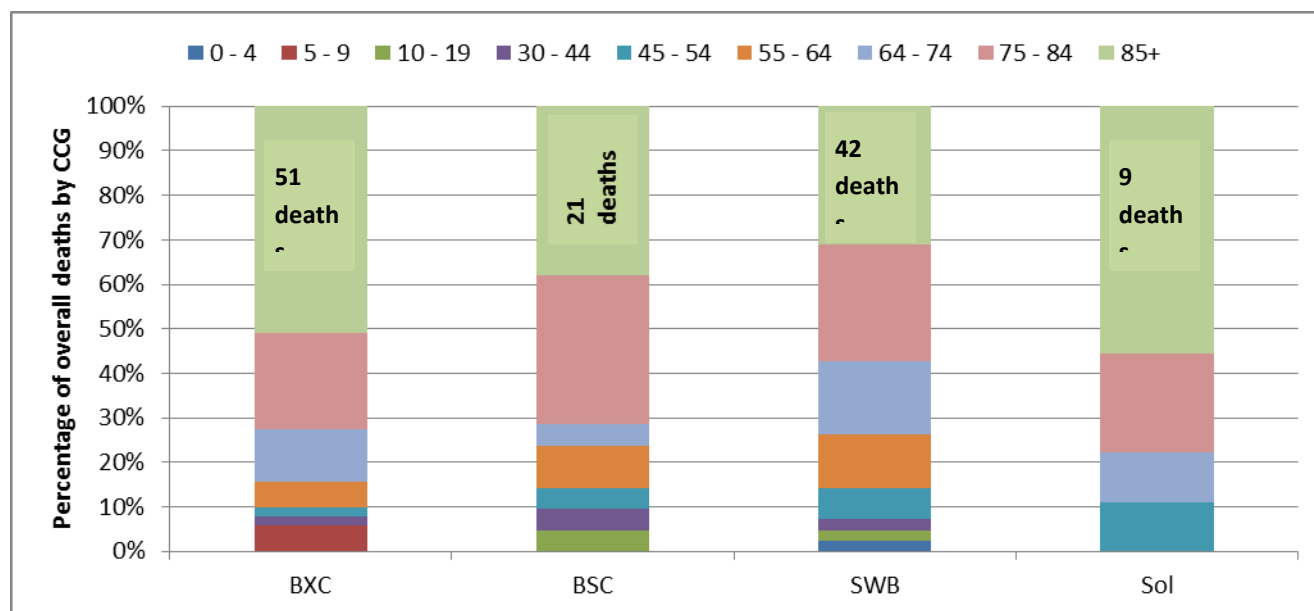


FIGURE 20 – PROPORTION OF DEATHS DUE TO ASTHMA 2010-2012, BY CCG, BY AGE CATEGORY (TOTAL NUMBER OF DEATHS ALSO SHOWN)

2.5 End of Life Care

Within the DH Outcomes framework, End of Life care is required to be reported on a monthly basis. The indicator requires PCT (from 2013 Local Authorities) to increase the proportion of people who die at home; this is based on the End of Life Care Strategy 2008 which assumes that in reality the majority of people would prefer to die at home. With this in mind, since the strategy was developed there has been a national indicator; the latest (SQU02) defines home as 'Usual place of residence... home, care homes (NHS and non-NHS) and religious establishments.'

Following its introduction in the financial year 2011/12 a target of 45% was set until 2015 for Birmingham and Solihull NHS Cluster to achieve. The target is 45% by 2015 across all diseases; this therefore applies to COPD, asthma and other respiratory diseases. Figure 21 shows COPD achievement in 2012, by CCG. All CCGs are still some way from the target. Performance for COPD compares somewhat unfavourably with cancer, where

there appears to be better achievement across the CCGs (other than BSC), with Solihull reaching the 45% target. End of Life care for cancer may be able to provide an example for COPD to follow. Data from 2010 and 2011 were very similar to that of 2012 and are not shown.

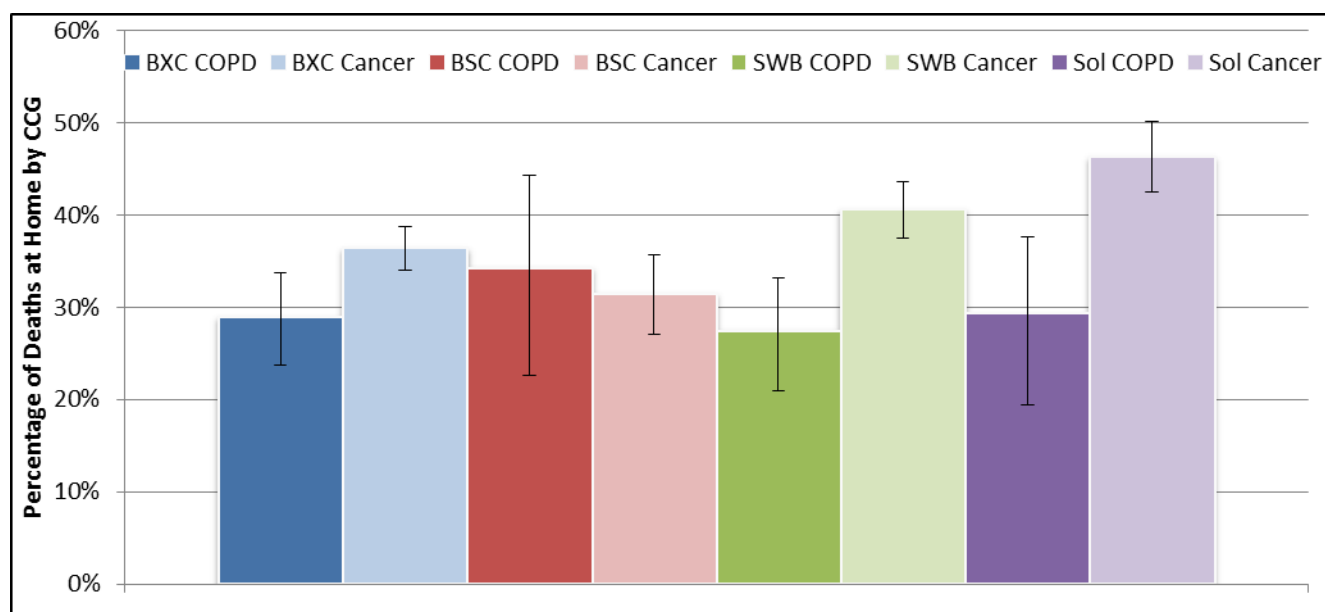


FIGURE 21 – PROPORTION OF PEOPLE WITH COPD THAT DIE AT HOME 2010-2012 COMPARED TO CANCER, BY CCG, BY YEAR

Deaths are fewer for asthma, though there is a higher proportion of people dying at home with asthma than from COPD; adding them to the COPD figures does not significantly alter the overall proportion of deaths at home seen in Figure 23.

2.6 Spending on services

2.6.1 Programme spend

The latest data regarding programme spend by commissioners (2011/12) is available from Public Health England. The change in commissioning from PCTs to CCGs has not led to any changes in the delivery of respiratory services, so this data may be a good indicator of current practice.

Figure 22 shows spend and outcome on respiratory services, in each of the 4 CCGs, compared to England. Outcome is the Directly Standardised Mortality Rate for bronchitis, emphysema and COPD, for those aged under 75. Both spend and outcomes have been shown as a z-score, i.e. the distance of the CCG value away from the England total value (which by definition is 0 on both axes – the centre of the graph). A mark outside the solid green box would be due to chance only around 5% of the time; being outside the dashed green box may be due to chance more frequently, at around 31%, and is thus less useful for comparison.

The data suggests that the local CCGs are statistically similar in terms of outcomes and spend (compared to England overall). The only difference that appears significant at a 95% level is the spend between BSC and Solihull. Such a graph may be particularly useful if used in a time-series over a number of years, to see if spend or outcomes change and follow any particular pattern.

More refined data are available showing spend on obstructive airways disease; asthma; and other respiratory diseases separately; this data is likely to be inconsistently recorded by practitioners and organisations, so have not been included in this report.

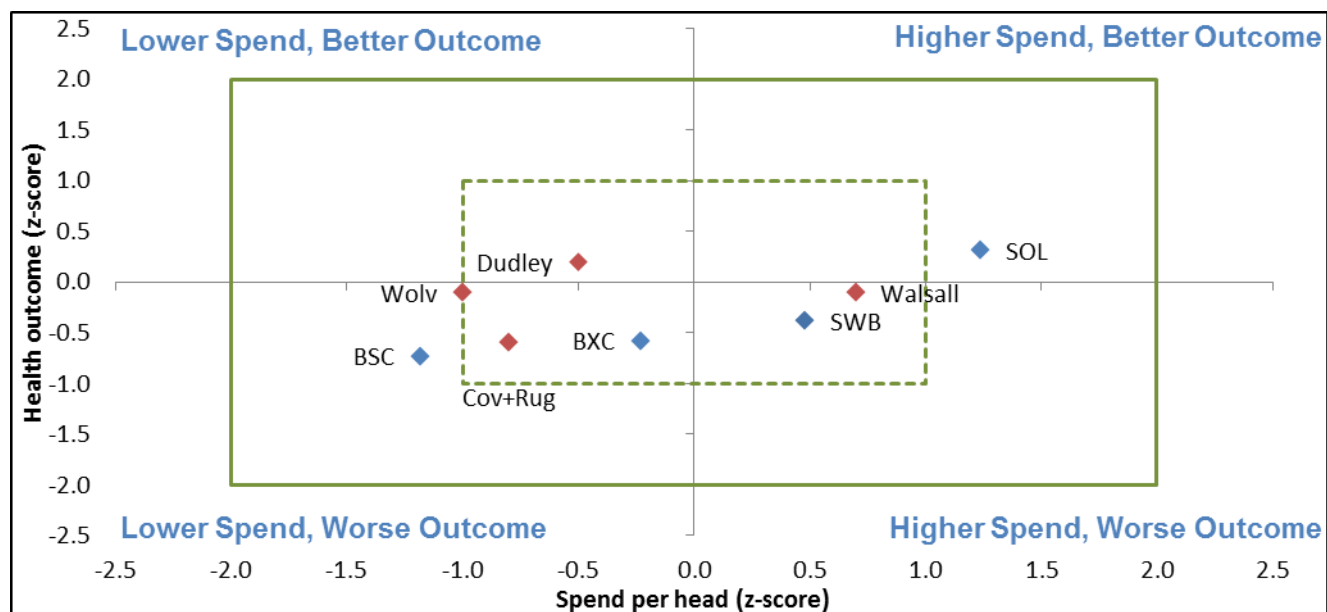


FIGURE 22 – STANDARDISED SPENDS AND OUTCOMES (DEATHS DUE TO RESPIRATORY DISEASE) FOR LOCAL CCGS (BLUE) COMPARED TO OTHER CCGS (RED) AND ENGLAND AVERAGE (CENTRE OF GRAPH)

2.6.2 Medication spend

The treatment of asthma and COPD usually requires medications, often inhaled, to either prevent symptoms from flaring, or reducing the severity of any exacerbations. The amount of money spent on inhaled medications by each of the CCGs (per registered COPD or asthma patient) is shown in Figure 23. The spending on inhaled medications seems to match that of the whole programme spend seen in Figure 22 (a large proportion of programme spend is on medications). Figure 23 should be interpreted with care as the spend has not been adjusted for any variables in the patient population, such as age.

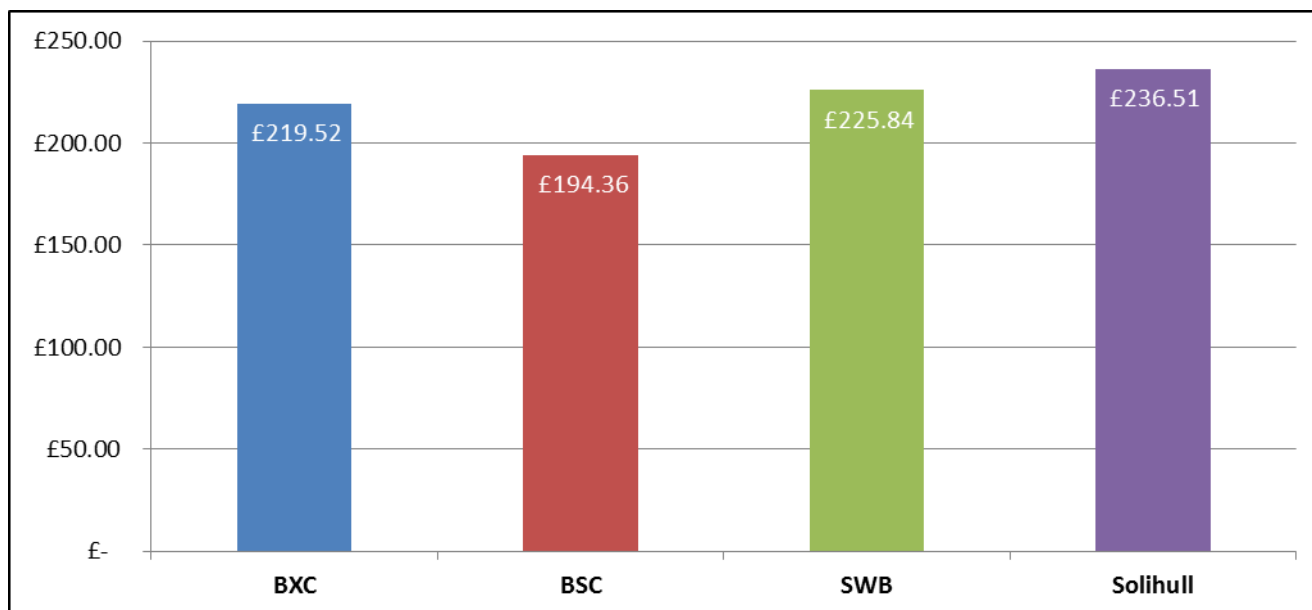


FIGURE 23 – AVERAGE SPEND PER PATIENT REGISTERED WITH COPD OR ASTHMA ON INHALED MEDICATIONS FROM CHAPTER 3 BNF.

2.7 Wider determinants of respiratory health

It has been noted previously in this section that the wider determinants of health impact upon respiratory health. In particular, air quality has a direct relationship with health. In Birmingham, there is geographical data suggesting various measures of air quality are associated with COPD admissions. Figures 24 and 25 demonstrate this to some degree: The higher COPD admission rates in Birmingham (seen by ward), and the concentration of PM10 (particulate matter 10 microns wide) are shown in these maps to have some overlap.

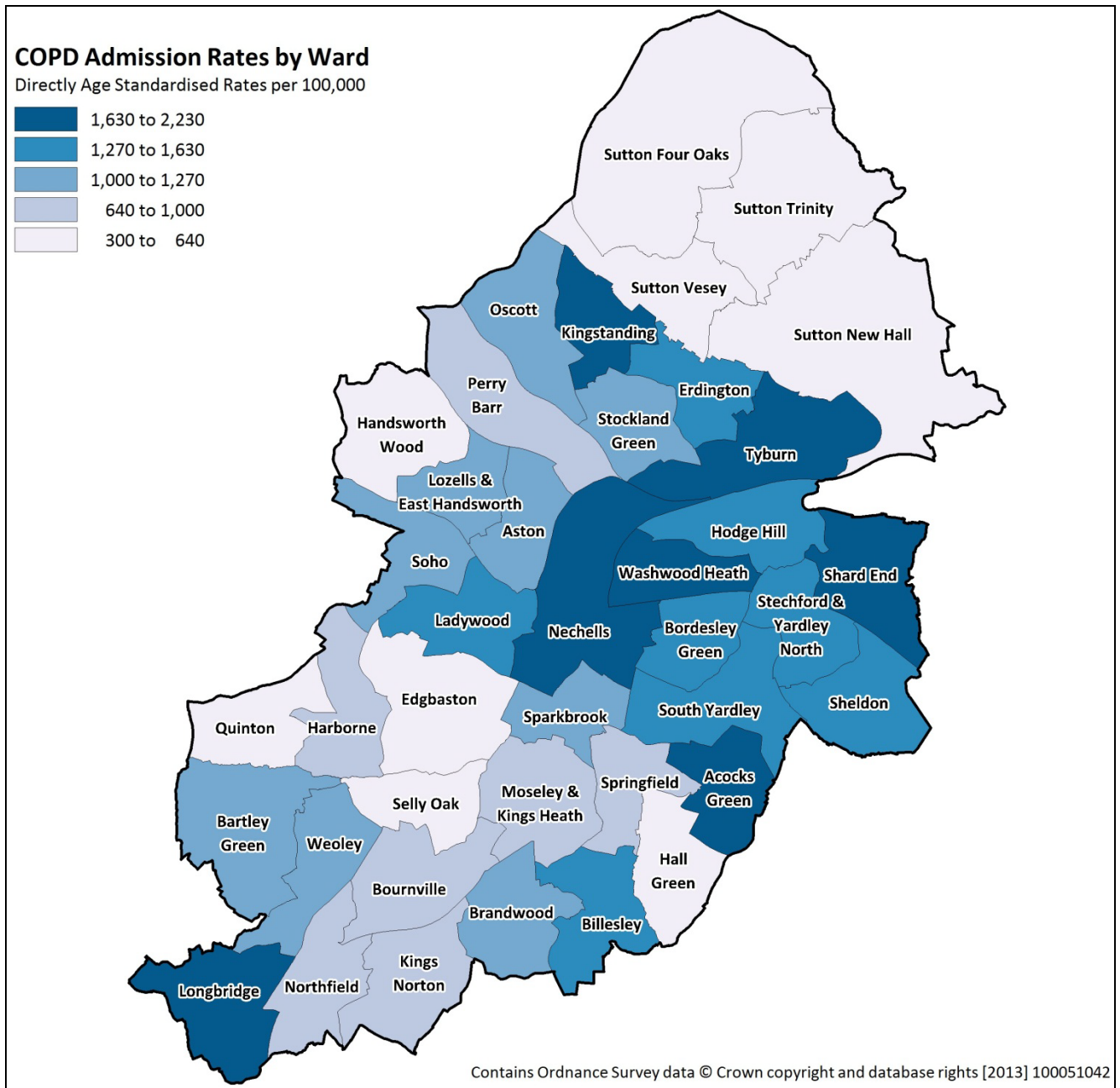


FIGURE 24 – COPD NON-ELECTIVE ADMISSION RATES IN BIRMINGHAM 2011/12, BY WARD

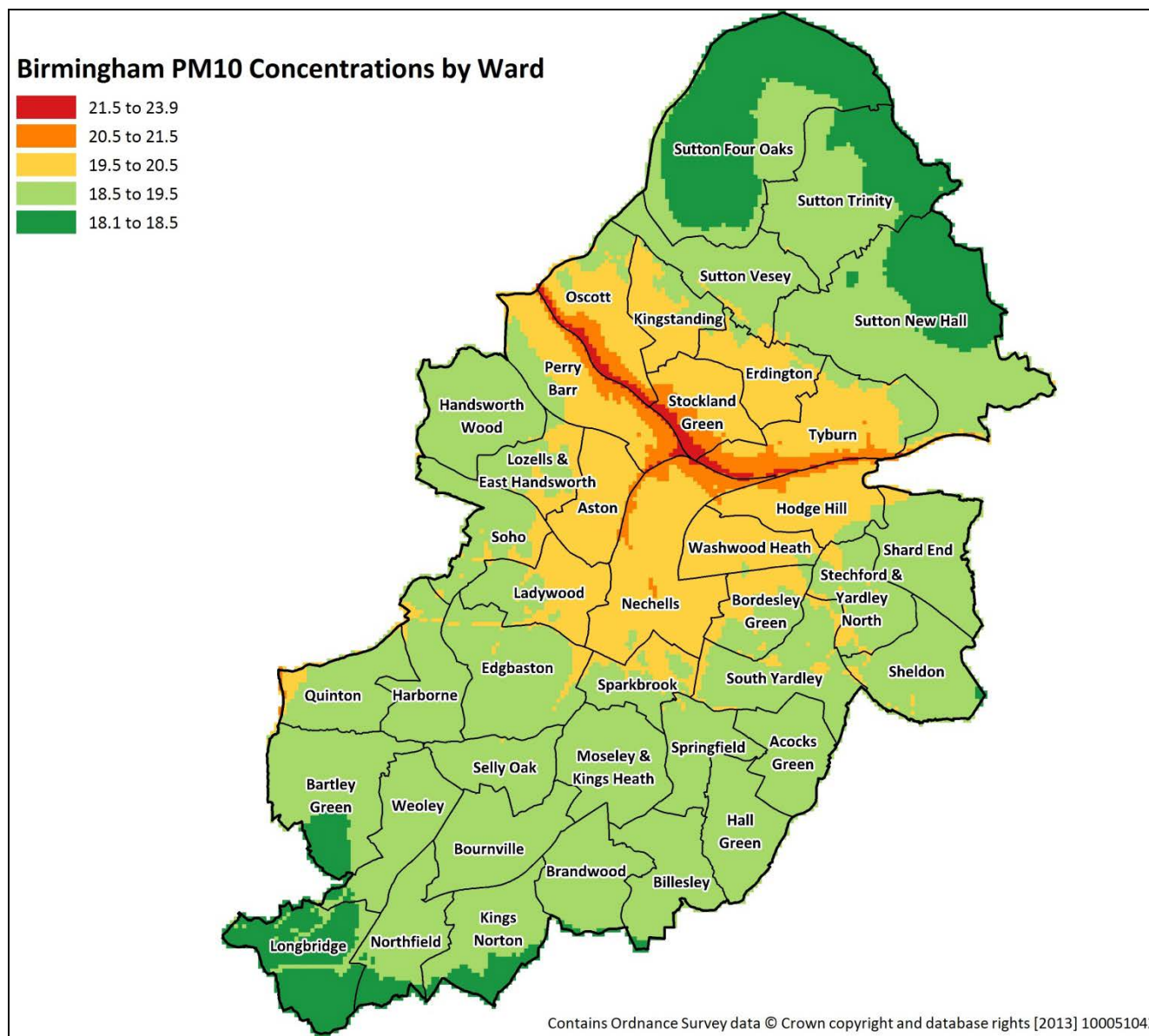


FIGURE 25 – CONCENTRATION OF PM10 CONCENTRATIONS IN BIRMINGHAM (MODELLED DATA)

There is no ‘safe’ limit for PM10 concentrations (lower is better). There appears to be dispersion of the PM10s from the motorways in Birmingham around several of the wards surrounding them. Similar map data for nitrous oxides across Birmingham show higher concentrations around main roads and the arterial routes used in the city. This represents a potential area where improvements can be made in order to improve the health of the population.

As well as air pollution, poor quality homes that are not adequately keeping residents warm may also be exacerbating respiratory conditions. Figure 26 shows the percentage of private households in Birmingham that are ‘non-decent’ and house people who are vulnerable (i.e. in receipt of particular benefits). These again appear to be linked to the areas of highest deprivation, highest COPD admission rates, and air pollution. Targeting people living in these areas may be of benefit, particular when first diagnosed with COPD.

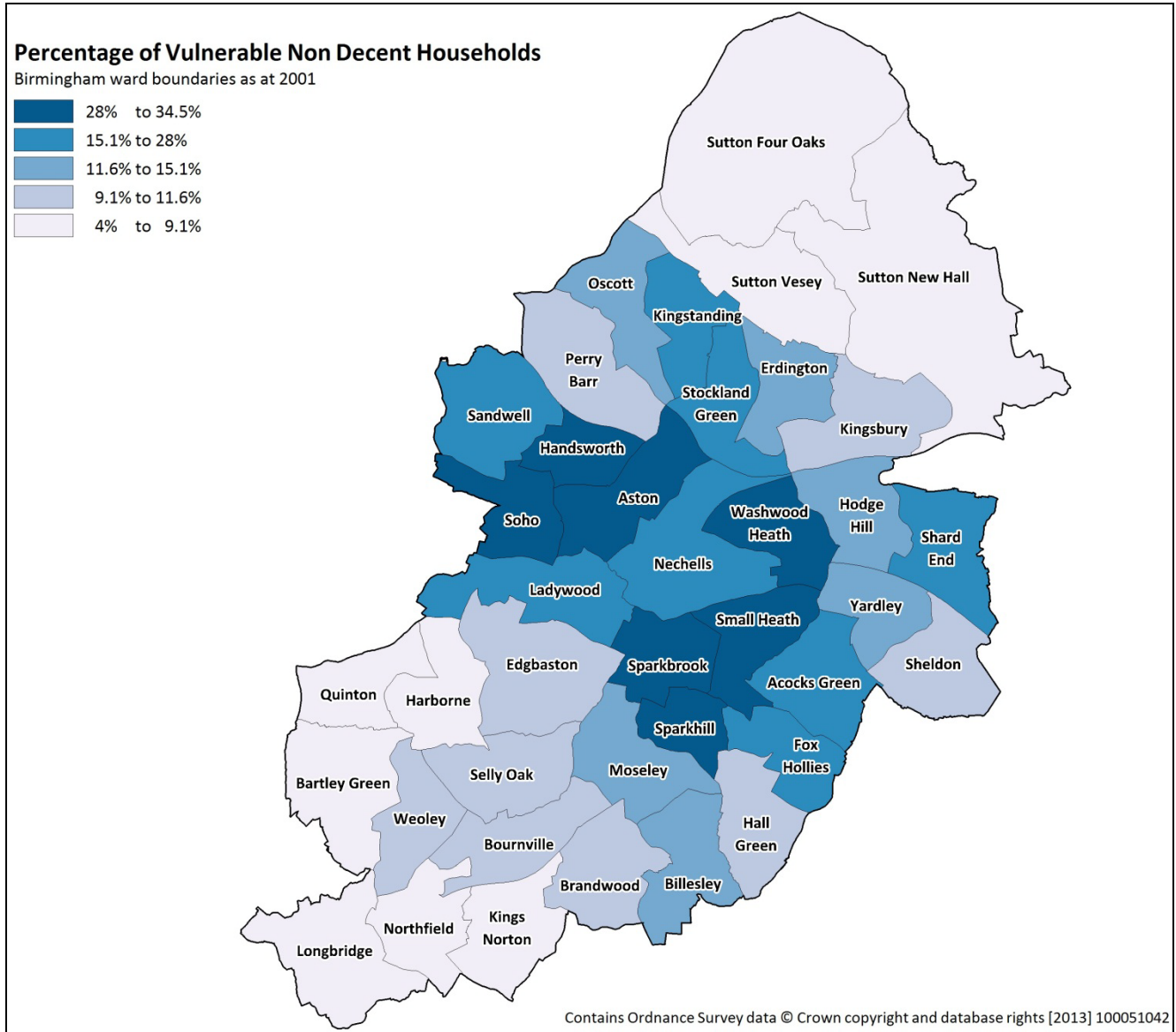


FIGURE 26 – PROPORTION OF PRIVATE HOUSEHOLDS IN BIRMINGHAM WHICH HOUSE VULNERABLE PERSONS AND ARE NON-DECENT

A fuller document is currently being produced within Birmingham City Council that demonstrates wider determinants and their relationship with respiratory disease; it is anticipated that joint work may be necessary between CCGs and Local Authorities in order to deliver health-promoting benefits.

In Birmingham, there is an emerging ‘Health through Warmth’ strategy. There are clear areas of collaboration between the health sector and other public bodies (such as Local Authorities) that have a great deal of influence over wider determinants of health. Specific areas of potential action are noted in the recommendations section.

SUMMARY OF CHAPTER 2

The main themes that have emerged from attempting to analyse epidemiology of respiratory conditions locally has been:

- A relative lack of accurate data regarding prevalence at a local level (QOF is limited in this respect; especially as approximately half of people with COPD remain undiagnosed)
 - People that are undiagnosed, the inference is that they are not receiving optimal care.
- The number (and percentage) of people with COPD and asthma appears to vary by locality; without more accurate data, it is not possible to determine if prevalence truly differs between sub-locality, or if the proportion of undiagnosed differs by locality, or both.
- Admission rates tend to be higher for people that live in the areas of highest deprivation (COPD & asthma), people of White background (COPD), children (asthma)
- A higher proportion of admissions are 'zero-day' locally compared to England overall; it is unclear what the cause of this is, but it is a potential area for both improved delivery of care and for saving commissioner resources
- More than half of admissions for COPD are readmissions (within 12 months of previous admission), though SWB appears to have a lower proportion than other CCGs
- The outcomes (deaths) due to respiratory disease vary by deprivation and local authority area, and appear to be particularly poor in Sandwell for asthma
- Wider determinants of health including air quality and housing quality appear to be linked to respiratory disease locally, and may provide avenues for wider working between health and non-health sectors

3 STAKEHOLDER VIEWS

3.1 Stakeholder engagement & involvement

A mapping exercise was undertaken as part of the system-wide respiratory review to identify key stakeholders that were later invited to take part in sharing views about how local respiratory services for asthma and COPD could be developed. The review across the four CCGs covers an approximate population of 1.7 million people. It is clear from the scoping exercises and primary care audit (Chapter 5) that there is significant variation in service provision available to patients across these four CCG areas. The review sought to capture a snapshot of the views and experiences of patients and carers to provide further evidence to support the case for change and ensure that recommendations were patient-focused. This included also inviting clinicians and voluntary sector services to share their knowledge of patient experience and to highlight service gaps.

Four key activities were undertaken and this included;

- Call for information – from the public, providers and CCGs
- Stakeholder mapping and awareness raising about the review
- Respiratory Focus Group – involving clinicians, patients, carers and the voluntary sector

A summary of the key themes that have come out of the above is shown in Table 5, with a list of stakeholders engaged and involved shown in Appendix 2. A key recommendation of the review is that it is clear that no one agency can meet the needs of patients and that there is a considerable benefit to patients for further collaboration across the four CCG areas. Patients and carers engaged felt it was critical that they continued to be involved through the planning and any potential commissioning stages.

There were five key themes that emerged that were similar for asthma and COPD these included;

- Equity of services
- Access
- Knowledge & Education
- Integration
- Children

Having a unified framework of care for asthma and COPD came out as the single most important factor and supports this case for change. By working collaboratively this would enable CCGs to commission services that were more equitable and address the real variation of services available as well as issues with services being hard for patients to access (e.g. pulmonary rehabilitation). Improving early diagnosis rates and integration of care should also be a key priority for CCGs, as well as investment in evidenced-based training and patient education programmes. It was clear from the review that there is a real willingness on the part of providers and clinicians to develop services, but that the current configuration of respiratory services that has evolved over time is a barrier to moving forward.

The review also considered the needs of children and further work should be undertaken across the four CCGs to capture the views of children and parents. A number of paediatric, school nursing and health visiting clinicians involved highlighted in addition to the above themes some specific priorities for child asthma;

- Develop child asthma care pathway including on-going management

- Develop an asthma friendly schools initiative
- Paediatric respiratory training for key staff – practice nurses, health visitors & school nurses
- Intensive education programme aimed at children on self-management

These findings for child asthma were consistent with a more detailed piece of work carried out by Asthma UK for CCGs based in Bradford and Airedale, from the perspective of children and young people (2013²⁴).

The final key area that emerged from the review was the need for CCGs to unlock the potential of the voluntary sector, particularly around education and self-management. This has considerable benefits in human costs to patients in improving quality of care and wellbeing, but also to CCGs to be part of a strategy to avoid unnecessary hospital admissions and reduce deaths, particularly those relating to asthma.

A more detailed scoping of the voluntary sector services and review of commissioning arrangements should be carried by the four CCGs with a view to developing a sustainable collaborative approach to asthma and COPD care. Better utilisation of existing services should also be prioritised in year one and should include development of simple guides to access services available to patients, carers and clinicians. Patients and carers should be involved in developing better information guides or web based tools.

Table 5, below, shows the key themes that have been identified as part of the service review process.

<p>Equity of Services CCGs sign up to a common framework for asthma & COPD with flexibility for delivery to reflect local priorities</p>	<ul style="list-style-type: none"> • Unifying framework across CCGs for asthma & COPD • Framework to include development of new care pathways • Unifying prescribing for treatment across all four CCGs • Increase access to oxygen services • For COPD patients improve the quality of end of life care • For asthma reduce preventable deaths • Develop community services – including pulmonary rehabilitation to also include access to psychology for all patients • Access to good quality equipment and know how to use it • Addressing wider determinates e.g. housing, fuel poverty
<p>Knowledge & Education CCGs by investing in better training and education can improve early diagnosis and increase better management of conditions, avoiding hospital admissions</p>	<ul style="list-style-type: none"> • Patient education and self-management programme across four CCGs as standard • Target training at clinicians to improve early and accurate diagnosis of asthma and COPD • Ensure community clinicians have a level of qualification and training respiratory • Include respiratory module for new wave of health visitors • Develop some asthma friendly schools training aimed at key staff e.g. teachers, lunch staff • Increase awareness about diseases, services and management through better information and creating virtual communities • Develop patient and carer peer support in partnership with the voluntary sector • Unlocking potential of voluntary sector around training, expert patient programmes and promoting self-care by better disease management

<p>Access CCGs to improve patient care by addressing issues of access and quality of services</p>	<ul style="list-style-type: none"> • All patients have access to a named clinicians to coordinate their care • Develop a framework and pathway standards based on national guidelines and patient needs – to include timely access, length of appointments, access to reviews, access to local of services e.g. pulmonary rehabilitation and access out of hours to community services • Address cross-boundary issues around access to services and continued care • Increase access to wrap around services from primary and secondary care referrals • In secondary care ensure asthma and COPD patients are reviewed by a respiratory specialist for all non-elective admissions • Increase access to respiratory champions in primary care or community services • Access to online resources, service guides and access to virtual support communities (look at other web based tools such as in Dudley, British Lung Foundation)
<p>Integration Patients want to access services that are joined up and where communication is at the heart of coordinating their care between primary, secondary and community based services</p>	<ul style="list-style-type: none"> • Integrated community services with primary and secondary care • Develop a framework which is based on a model of joined up care and agreed communication processes e.g. notifications to primary care following patient accessing emergency departments or non-elective admissions for asthma and COPD • Develop multi-disciplinary teams (MDTs) for asthma and COPD - clinicians social care & district nurse, health visiting and school nurses • Review and develop end of life care for COPD patients • Develop consistent approach to access to psychology as part of the care pathways for asthma and COPD and staff in MDTs
<p>Children</p>	<ul style="list-style-type: none"> • Develop child asthma care pathway including on-going management • Develop an asthma friendly schools initiative • Paediatric respiratory training for key staff – practice nurses, health visitors & school nurses • Intensive education programme aimed at children on self-management

TABLE 5 – KEY THEMES IDENTIFIED THROUGH THE CALL FOR INFORMATION AND THE FOCUS GROUP HELD ON AUGUST 15TH 2013

SUMMARY OF CHAPTER 3

- The 5 key themes highlighted in the table are what was agreed as having particular importance for COPD and asthma care in Sandwell, Birmingham, and Solihull

4 EVIDENCE REGARDING BEST PRACTICE

4.1 Methodology of evidence search

For reasons of time, the search of the evidence base was focused mainly on secondary research and guidance – the following sources were used: Cochrane Library; NICE; British Thoracic Society (BTS); and Department of Health (DH). Additional sources were recommended by the review group. An internet search was conducted to find case studies relating to bundles of care. We focused on identifying evidence relating to service interventions; research relating to causes/risk factors and pharmacological interventions have been excluded as out of scope.

4.2 Evidence on service interventions for asthma

4.2.1 Guidance

There are a number of key guidance documents outlining standards and expectations of services, most notably the NICE Quality Standards (QS25 for asthma, QS10 for COPD); statements and recommendations are included here.

The DH's **Outcomes Strategy for Chronic Obstructive Pulmonary Disease (COPD) and Asthma in England**²⁵ outlines the need to improve outcomes for patients with COPD or asthma, focusing on:

- Reducing inequalities
- Prevention through healthier lifestyles
- Reducing mortality
- Improving quality of life
- Delivering safe and effective care
- Helping asthma patients to remain symptom free, using self-management methods

NICE QS25²⁶ highlights the need for an integrated approach to service provision and “sufficient and appropriate training” for all healthcare professionals involved in the care of patients with asthma. The Quality Standard lists the following statements which describe the important elements of a high quality service:

1. People with newly diagnosed asthma are diagnosed in accordance with BTS/SIGN guidance
2. Adults with new onset asthma are assessed for occupational causes
3. People with asthma receive a written personalised action plan
4. People with asthma are given specific training and assessment in inhaler technique before starting any new inhaler treatment
5. People with asthma receive a structured review at least annually
6. People with asthma who present with respiratory symptoms receive an assessment of their asthma control

7. People with asthma who present with an exacerbation of their symptoms receive an objective measurement of severity at the time of presentation
8. People aged 5 years or older presenting to a healthcare professional with a severe or life-threatening acute exacerbation of asthma receive oral or intravenous steroids within 1 hour of presentation
9. People admitted to hospital with an acute exacerbation of asthma have a structured review by a member of a specialist respiratory team before discharge
10. People who received treatment in hospital or through out-of-hours services for an acute exacerbation of asthma are followed up by their own GP practice within 2 working days of treatment
11. People with difficult asthma are offered an assessment by a multidisciplinary difficult asthma service

There is also a specific guide for commissioners, Designing and commissioning services for adults with asthma, from Primary Care Commissioning (2012²⁷) in partnership with organisations including the BTS.

4.2.2 Secondary evidence

Diagnosis

NICE QS25²⁶ places a responsibility on commissioners to ensure the commissioning of services for newly diagnosed patients and for adults with new onset of occupational asthma. The recommended diagnostic process is described in detail in the guidance produced by SIGN and BTS (2008, revised 2012²⁸).

The BTS/SIGN guidance notes the lack of a gold standard in diagnosing asthma in children and advises courses of action to take depending on the probability of asthma. It notes that spirometry is not effective in children under 5 years old.

For adults, the guidance recommends spirometry as the preferred diagnostic test. It recommends starting treatment immediately for those who have a high probability of asthma as opposed to further testing. Reversibility testing is recommended for adults with airways obstruction and an intermediate probability of asthma.

Monitoring

A structured review, provided at least annually (more frequently if indicated) is recommended for both adults and children with asthma^{26,28}. Height and weight centile should be monitored at least annually in children²⁸. The guidance suggests the following should also be recorded:

- Symptom score, e.g. Children's Asthma Control Test, Asthma Control Questionnaire
- Exacerbations, oral corticosteroid use and time off school/nursery due to asthma since last assessment
- Inhaler technique
- Adherence, *which can be assessed by reviewing prescription refill frequency*
- Possession of and use of self-management plan/personalised asthma action plan
- Exposure to tobacco smoke

For adolescent patients, the guidance suggests transitional services, where the patient is given the opportunity to be seen without their parents/guardians present and care is coordinated between paediatric and adult services.

For adult patients, practitioners should closely monitor those with poor lung function and/or with a history of exacerbations in the previous year²⁸. This BTS/SIGN guidance also recommends recording the following:

- Symptomatic asthma control: best assessed using directive questions such as the RCP '3 questions', or the Asthma Control Questionnaire or Asthma Control Test
- Lung function, assessed by spirometry or by PEF
- Exacerbations, oral corticosteroid use and time off work or school since last assessment
- Inhaler technique
- Adherence, *which can be assessed by reviewing prescription refill frequency*
- Bronchodilator reliance, which can be assessed by reviewing prescription refill frequency
- Possession of and use of self-management plan/personal action plan

Patients experiencing exacerbations should be given an objective measurement of severity²⁶.

Case study: ESyDoc Clinical Commissioning Group (NHS Lung Improvement, 2013²⁹)

The CCG found lower than average asthma prevalence and the majority of registered asthma patients were without a self-management plan. ESyDoc had successfully completed an improvement project for COPD patients and decided to apply the principles they had established in this work to their asthma service

The CCG created an asthma review template, for completion by nurses with asthma patients in all practices with Read codes for separate parts of the review e.g. inhaler check and self-management plan issued; and also looked at 4 workstreams:

1. Diagnosis – Practice registers were searched to identify the number of patients who have received asthma medication, but were without a formal diagnosis. Patients were then targeted by letter to a review appointment. Diagnosis was obtained following prescribed spirometry and/or peak flow pathway and the patient was stabilised accordingly and received an asthma action plan in line with the BTS/SIGN Guideline.
2. Chronic Disease management – stratifying patients into three cohorts and performing structured nurse-led reviews in line with the BTS/SIGN Asthma Guideline
3. Medicines optimisation
4. Transforming acute care – standardising care pathways

The outcomes were:

1. Diagnosis – Early evidence suggests that by implementing this targeted approach of identified patients local prevalence has increased to 5.5% and at least 154 patients were diagnosed with asthma during the project duration
2. Chronic Disease Management – High non-attending rates however final data from 15 practices showed noticeable improvements: BTS step recording went from 4% to 20%, compliance recording increased by 7%, recording of inhaler technique increased by 813 patients, 454 extra patients had a self-management plan, and 58 additional patients were referred for smoking cessation
3. Pharmacy colleagues have also assisted with reinforcing effective inhaler technique when implementing a medicines use review within that specific setting
4. This primary and secondary care combined approach has demonstrated that, in comparison with the previous 12 months, admissions have dropped by 21%

To help manage important risk factors, the BTS/SIGN guidance also recommends:

- Offering smoking cessation support and services
- Weight reduction in obese patients
- Family therapy for children with difficult asthma
- Keeping patients who have had near-fatal or brittle asthma under indefinite specialist supervision
- Specialist follow up of patients admitted with severe asthma for at least 1 year
- Patients with severe asthma and at least one psychosocial factor (e.g. missed appointments, self-discharge from hospital, mental health problems, social problems) are at higher risk of mortality

NICE recommends a multidisciplinary difficult asthma service to provide assessments for patients with difficult asthma.

Therapy

Sansom-Daly et al (2011³⁰) reviewed the effectiveness of psychological interventions for adolescents and young people with chronic conditions. They found that skill-based interventions could benefit patients – interventions included mentoring, residential camps, cognitive therapy and family therapy. The authors concluded that communication skills are a key element and found that interventions were more successful when delivered over at least 3 months and by a professional.

The BTS/SIGN guidance notes that telephone reviews could be as effective as those using face-to-face consultations; however, this will not be suitable for some patients, for example, those with poor asthma control or inhaler-related problems. The guidance also notes that outreach support for primary care by asthma specialist nurses could help reduce unplanned care but is more effective when targeted at patients recently discharged following exacerbations.

Case study: Sandwell Community Respiratory Team²⁹

Sandwell had the third highest admission rate within the UK and a high prevalence rate of asthma in the area, with low referrals to the Community Respiratory Service from GPs and secondary care.

The team created a plan for raising awareness with GPs e.g. referral algorithm, promotional materials, visits to the practice, etc. They also spent time in A&E with staff offering support and highlighting their service in order to aid ease of referral. The team also conducted an audit of one year's worth of case notes to determine current compliance with the BTS/SIGN Asthma Guideline for asthma patients. A demand and capacity exercise was also completed to determine the impact increasing referrals might have on workload and refresher sessions were held. An electronic 'SystemOne' template was then created which clinical staff use for all patient assessment and follow-up appointments (which contains the gold standard features) and any patients with an unconfirmed diagnosis are now referred for spirometry.

Differences between 2010/11 and 2011/12 showed a 21% decrease in admissions, 29% decrease in A&E attendances, 75% increase in total referrals into the Community Respiratory Services, 21% increase in self-management plans given to the patient, 22% increase in self-management plan amended for patient, 6% decrease in diagnosis confirmed with spirometry, 16% increase in asthma education given to patients, and 8.2% increase in inhaler technique reviewed.

Nurse-led care was reviewed by Kuethe et al (2013³¹) who concluded that nurse-led care may be suitable for patients with well-controlled asthma; the trials reviewed showed no significant difference between nurse-led care for patients with asthma compared to physician-led care for the outcomes assessed.

Baishnab (2012³²) reviewed the effectiveness of primary care based asthma clinics – this is a model which has been used successfully in other patient groups. However, the review concluded the evidence is still too limited to offer firm conclusions on the effectiveness of such clinics for asthma patients; the studies reviewed showed

no significant difference in outcomes in either the clinic groups or the control groups and there was significant heterogeneity across the studies.

McLean et al (2010³³) reviewed the use of telehealthcare, including telephone, videoconferencing, texting and Internet. They concluded: "*Telehealthcare interventions are unlikely to result in clinically relevant improvements in health outcomes in those with relatively mild asthma, but they may have a role in those with more severe disease who are at high risk of hospital admission. Further trials evaluating the effectiveness and cost-effectiveness of a range of telehealthcare interventions are needed.*" Trials showed a non-significant increase in emergency admissions for those receiving telehealthcare but a significant decrease in hospitalisations over a 12 month period.

The BTS/SIGN Guidance points out that the safety of telephone help lines is not yet proved. de Jongh (2012³⁴) has reviewed the use of text messaging in relation to patients with long term conditions. The review found higher primary care visits in the group allocated to receive text messaging but lower hospital visits; however, they conclude it is too early to draw robust conclusions due to the small number of studies.

Education and self-management

NICE QS25²⁶ recommends that all patients are given a written personalised action plan and that all patients receive training before starting new inhaler treatment. The BTS/SIGN guidance²⁸ notes that research has shown that training patients to use inhalers can improve correct usage technique from a mean of 60% to 79%. It recommends patients are prescribed inhalers only after training.

Case study: Isle of Wight PCT (NHS Right Care, 2012³⁵)

The PCT was experiencing high levels of emergency admission for asthma and high spend on inhaled medication.

They introduced an intervention to improve inhalation techniques (effective inhaler use results in 20% of the medication in a metered dose inhaler (MDI) reaching the lungs, with poor technique it falls to between 0% and 10%). An audit of the training techniques of healthcare professionals was undertaken and revealed a very low level of performance across the board: 94% of professionals were unable to demonstrate correct inhaler use. Programme to train healthcare professionals including use of the inhaler, patient training, and assessment of inhaler technique. Patients also received a training aid and an advertising campaign was also mounted to raise awareness among patients to ensure that they received the appropriate training in inhaler technique.

Expenditure on selective beta-agonists fell by 22.7% – a saving greater than seven times the initial investment by Isle of Wight PCT, prescription numbers fell by 25.2%, and emergency admissions due to asthma were reduced by 50%.

The BTS/SIGN guidance also notes and recommends the following:

- Patient education before discharge, including inhaler technique and PEF record keeping
- Education may help to reduce hospital admission and self-management techniques but does not seem to help reduce emergency attendances; for frequent attenders, there may be some benefit in a trained asthma liaison nurse based in, or associated with, the emergency department
- Programmes incorporating innovative approaches such as web-based tools, peer mentoring, may be more successful with adolescents
- Different approaches may be needed for pre-school children, many of whom have viral induced wheeze
- There is some evidence to suggest that self-management programmes may be less successful in different ethnic minority groups but there are too few studies in this area to offer firm conclusions. Press³⁶ (2012) explored this area and found education interventions did improve outcomes, however the studies reviewed varied significantly, making it difficult to generalise
- Education interventions should include actions to take in the event of an exacerbation
- The duration, content and format for delivering education varies considerably in the literature; however there is a suggestion that short programmes may be as effective as long programmes.

The SIGN/BTS guidance includes a checklist suggesting content for education programmes:

Checklist 1. Suggested content for an educational programme/discussion

This checklist is intended as an example, which health professionals should adapt to meet the needs of individual patients and/or carers. The purpose of education is to empower patients and/or carers to undertake self management more appropriately and effectively. Information given should be tailored to individual patient's social, emotional and disease status, and age. Different approaches are needed for different ages.

- Nature of the disease
- Nature of the treatment
- Identify areas where patient most wants treatment to have effect
- How to use the treatment
- Development of self monitoring/self assessment skills
- Negotiation of the personalised action plan in light of identified patient goals
- Recognition and management of acute exacerbations
- Appropriate allergen or trigger avoidance.

Case study: Mid Yorkshire Hospitals NHS Trust (MYHT)²⁹

The Trust was experiencing high admission rates for acute exacerbation of asthma, high readmissions (twice national average), audit revealed low lack of education and instruction to patients

An asthma bundle comprised of 'three stickers' was introduced at Pinderfields General Hospital (PGH). Sticker one is used for all adult patients attending the ED with an acute exacerbation of asthma. This component of the bundle focuses on accurate and timely assessment, treatment and reassessment of patients. Sticker two is implemented when patients are being discharged from ED, focusing on inhaler technique, education and self-management and GP follow-up. Stickers one and two contain all the elements within the locally agreed asthma CQUIN (Commissioning for Quality and Innovation) payment. Sticker three is used for all patients admitted from A&E with an exacerbation of asthma. This again promotes appropriate treatment, education, self-management and follow up.

There has been a marked improvement in the recording of inhaler technique review, provision of self-management plans and advice to see GP or Practice Nurse. There has also been a 60% reduction in readmissions.

Admission

NICE QS25²⁶ states that patients with severe exacerbations should receive:

- Oral or intravenous steroids (people aged 5 years or older) within 1 hour of presentation
- A review by a member of a specialist respiratory team before discharge

Case study: Guy's and St Thomas' NHS Foundation Trust (GSTT)²⁹

The trust was experiencing a 30 day re-attendance rate of just below 30%

In depth diagnostic work to reveal the causes of re-attendance through examination of A&E data to establish the target cohort, an audit of A&E casualty cards and a telephone interview with re-attenders to understand behaviours and motivators. Work more proactively asthma patients on discharge and help A&E healthcare professionals increase their knowledge to feel more confident working with asthma patients.

Re-attenders at A&E have fallen by 45% from the previous year.

Discharge

The BTS/SIGN guidance²⁸ notes that an apparent improvement in symptoms and peak flow may be sufficient for discharge, as opposed to a complete return to normality. The guidance also states that "*although diurnal variability of PEF is not always present during an exacerbation, evidence suggests that patients discharged with PEF <75% best or predicted and with diurnal variability >25% are at greater risk of early relapse and readmission*".

The guidance recommends follow up with a GP or asthma nurse within 2 working days of discharge and with a hospital specialist asthma nurse or respiratory physician at 1 one month after discharge. It stresses the need

for communication between secondary and primary care, recommending that the GP practice is informed of exacerbations within 24 hours of discharge.

Discharge planning is recommended. For children, this should include the following:

- Check inhaler technique
- Consider the need for preventer treatment
- Provide a written asthma action plan for subsequent asthma exacerbations with clear
- Instructions about the use of bronchodilators and the need to seek urgent medical attention in the event of worsening symptoms not controlled by up to 10 puffs of salbutamol 4 hourly
- Arrange follow up by primary care services within 48 hours
- Arrange follow up in a paediatric asthma clinic within one to two months
- Arrange referral to a paediatric respiratory specialist if there have been life threatening features

The guidance notes that follow up of children by specialist asthma nurses can help improve self-management and symptom control and may avoid readmissions.

Crocker et al (2011³⁷) reviewed the effectiveness of home-based multi-trigger multi-component interventions for reducing asthma morbidity. They found some improvements in quality of life, school attendance for children (although no differences were observed for work absences for adults), and some improvements in pulmonary function. However, these findings are based on a small number of studies so the authors recommend caution.

4.2.3 Overall findings for asthma

	Evidence base suggests effective	Evidence base suggests harmful or ineffective	Evidence base uncertain
Diagnosis	Structured questionnaires	Measuring variable airway obstruction in children <5yo	
Monitoring	<p>Structured annual review</p> <p>Outreach support (primary care) by specialist nurses (patients with recent exacerbations)</p> <p>Nurse-led care may be appropriate in patients with well controlled asthma</p> <p>Telehealthcare interventions (patients with severe disease at high risk of admission)</p> <p>Home-based multi-trigger multi-component interventions (children/adolescents)</p> <p>Telephone reviews may be as effective as face-to-face (not suitable for patients with poor asthma control/inhaler-related problems)</p>	Telehealthcare (patients with relatively mild asthma)	<p>Primary care based asthma clinics</p> <p>Mobile phone messaging for facilitating self-management of long-term illnesses</p> <p>Home-based multi-trigger multicomponent interventions (adults)</p>
Therapy	Family therapy for children with difficult asthma		<p>Safety of telephone help lines</p> <p>Role of psychological interventions (children)</p> <p>Use of manual therapies e.g. Spinal manipulation.</p> <p>Use of Alexander technique</p> <p>Dietary calorie reduction for obese asthmatic patients</p> <p>Vitamin C supplements</p> <p>Flu vaccination for asthma patients</p>

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Education/Self-management	<p>Patient education on inhaler technique</p> <p>Asthma specialist nurse education of adults/school-age (not pre-school) children at/shortly after hospital attendance</p> <p>Written personalised action plans, by clinicians with expertise in asthma</p> <p>Innovative approaches for adolescents (web-based, peer delivered within schools)</p> <p>Education including communication skills, at least 3 months in duration, and delivered by a professional (adolescents)</p> <p>Advice to recognise loss of asthma control</p> <p>Actions, summarised as two or three action points, to take if asthma deteriorates</p> <p>Short programmes may be as effective</p>		<p>Different approach may be needed for pre-school children, many of whom have viral induced wheeze</p> <p>Self-management programmes may be of less benefit in ethnic minority groups</p>
Admission	<p>Indefinite specialist supervision for patients with near-fatal or brittle asthma</p> <p>Minimum 1 yr specialist follow up of patients admitted with severe asthma</p> <p>Structured care protocols inc bronchodilator usage, clinical assessment, safe discharge</p> <p>trained asthma liaison nurse based in, or associated with, the emergency department</p>		
Discharge	<p>Follow up with GP/asthma nurse within 2 working days; with hospital specialist asthma nurse/ respiratory physician at 1 month</p> <p>Primary care practice informed within 24 hrs of discharge</p>	<p>Waiting for complete return to normality - discharge when improvement is apparent may be as safe as discharge when full stability is achieved</p>	

TABLE 6 – SUMMARY OF EVIDENCE REGARDING SERVICE INTERVENTIONS FOR ASTHMA

4.3 Evidence on service interventions for COPD

4.3.1 Guidance

NICE QS10³⁸ lists the following statements to describe the critical factors of a high quality COPD service:

1. People with COPD are identified by having at least one symptom of COPD (such as breathlessness, long-lasting cough or often coughing up phlegm) and have their diagnosis confirmed by a trained healthcare professional using specialist equipment to test how well the lungs work.
2. People with COPD have an up-to-date, individually tailored care plan, which includes information and advice about their condition and how it will be managed, relevant to their stage of the disease.
3. People with COPD are offered medicines taken through the mouth (oral) or breathed in (inhaled) as part of an individually tailored care plan.
4. People with COPD have a full assessment at least once a year, or more frequently if necessary, which includes measuring breathlessness, frequency of flare-ups, checking current health and predicting future problems, and checking for other related conditions.
5. People with COPD who smoke are regularly encouraged to stop and offered support to stop smoking.
6. People with COPD are offered a programme of care, called pulmonary rehabilitation, which is designed for the person with their full involvement to help restore their health, if they are likely to benefit from it.
7. People who have had a flare-up of COPD are given written advice, tailored to the individual, to help them recognise future flare-ups early; a plan for managing flare-ups at home (including having antibiotics and corticosteroids to use at home if appropriate); and the name and details of a healthcare professional to contact.
8. People with COPD who may need long-term oxygen therapy are assessed by a specialist oxygen service.
9. People with COPD who are receiving long-term oxygen therapy have this reviewed at least once a year by a specialist oxygen service.
10. People admitted to hospital with a flare-up of COPD are cared for by a respiratory team and are considered for a scheme involving a shorter stay in hospital with extra support at home.
11. People admitted to hospital with a flare-up of COPD, who are not getting enough oxygen into their blood and not breathing deeply enough despite having the right type of medicines, are promptly assessed for a treatment called 'non-invasive ventilation'. This is an emergency treatment given by trained staff in hospital that involves wearing a mask connected to a machine that pumps oxygen into the lungs.

12. People admitted to hospital with a flare-up of COPD are checked within 2 weeks of leaving hospital.
13. People with advanced COPD and their carers are offered palliative care (which is care in the later stages of the disease to make the person as comfortable as possible) that addresses their physical, social and emotional needs.

The Commissioning Guide for COPD³⁹ outlines the case for delivering high quality services, specifically:

- Spirometry
- Pulmonary rehabilitation
- Managing exacerbations
- Home oxygen assessment and review

A series of service specifications, costing models and tools are provided for commissioners as part of this toolkit.

4.3.2 Secondary evidence

Diagnosis

NICE QS10³⁸ recommends that spirometry is used to confirm diagnosis of COPD, emphasising the need for calibrated equipment and trained professionals; this is highlighted in the Commissioning Guide for COPD³⁹: "*over 25% of people with a diagnostic label of COPD have been wrongly diagnosed, usually because of poorly performed spirometry*". The guidance from NICE (CG101)⁴⁰ also recommends the following at initial diagnosis:

- A chest radiograph to exclude other pathologies
- A full blood count to identify anaemia or polycythaemia
- Body mass index (BMI) calculated

The Commissioning Guide for COPD notes the importance of early diagnosis to avoid exacerbations and the likelihood of admissions. To assist with early identification, NICE QS10³⁸ recommends spirometry for patients over 35 years of age, who are current/ex-smokers and have a chronic cough.

Case study: COPD case-finding in Highfield Surgery, Hemel Hempstead³⁵

The practice was aware of undiagnosed COPD patients - their recorded COPD prevalence was substantially lower than the expected prevalence.

A smoking-load calculator was used to identify patients over 40 years of age and a smoking history of 15 pack-years or more. Full diagnostic spirometry was not cost-effective so they used microspirometers to provide rapid estimate of FEV1 and FEV6. People with abnormal results were targeted to proceed to full diagnostic spirometry.

Prevalence of COPD increased from 0.7% to 1.5%

Lin et al (2008⁴¹) concluded that wider screening is not effective and risks overdiagnosis - one study found 10% of health adults were diagnosed with COPD; another that 35% of healthy adults over the age of 70 and 50% over the age of 80% were wrongly diagnosed with COPD.

NICE QS10³⁸ recommends that spirometry is supported by quality control processes. It notes that reversibility testing is not needed as a routine part of the diagnosis and may even be misleading.

Monitoring

NICE QS10³⁸ recommends clinical and psychosocial assessments at least annually. This should be more often for patients with frequent exacerbations (it recommends twice a year for severe COPD), breathlessness or comorbidities. NICE QS10 recommends the following elements to the regular assessment:

- BMI
- Degree of breathlessness (using for example, MRC dyspnoea score)
- Frequency and severity of exacerbations
- Health status (using for example, the COPD assessment tool [CAT] or St George's respiratory questionnaire [SGRQ])
- Prognosis (using for example, the BODE index, DOSE or ADO index)
- Presence of hypoxaemia and possible need for oxygen therapy
- Presence of comorbidities
- Psychological assessment for anxiety and depression (using for example the Hospital Anxiety and Depression Score [HADS])
- Need for pulmonary rehabilitation
- Need for referral to specialist and therapy services
- Inhaler technique
- Smoking status and desire to quit
- Post-bronchodilator spirometry

Case study: Heart of Birmingham PCT (information via Review team)

Across Heart of Birmingham there were an average of 80 premature deaths per year resulting from COPD and other respiratory disease. COPD actual prevalence was lower than estimated prevalence.

The following interventions and standards for COPD were developed:

- Self-management plan
- In-practice follow-up appointment for all COPD related hospital admissions
- COPD should be stratified and recorded within the patient's clinical record (using CATest)
- A measure of oxygen saturation (SaO₂) should be taken and recorded
- A referral for Long-term Oxygen Therapy (LTOT) should be made where the patients SaO₂ level is below 92%
- A referral for Pulmonary Rehabilitation should be made where patients have an MRC breathlessness scale score of 3 or more

The following interventions and standards for asthma were developed:

- Self-management plan
- In-practice follow-up appointment for all asthma related hospital admissions
- The asthma control test (ACT) should be conducted at least once annually, and the number of exacerbations should be recorded for all patient

A 30% reduction for COPD emergency admissions and 36% reduction for asthma emergency admissions was measured. This equates to savings of approximately £160,722; £108,940 for COPD admissions and £51,782 for asthma admissions.

Therapy and care

NICE CG101⁴⁰ emphasises the importance of multidisciplinary care. It advises that a multidisciplinary team (MDT) should lead: assessment; care and treatment; advice and patient education; monitoring for exacerbations and taking actions to avoid admission; education of other professionals. The guidance emphasises the role of the respiratory nurse specialist.

Peytremann-Bridevaux (2008⁴²) reviewed the effectiveness of disease management programmes and found the interventions did improve exercise capacity, quality of life and admissions. The studies reviewed varied and there are some weaknesses in the review so it is difficult to draw robust conclusions as to effectiveness. Lemmens (2009⁴³) found that multiple interventions were more effective, combining education for patients and professionals, case management and revision of roles. Nurmatov et al (2012⁴⁴) reviewed the effectiveness of holistic programmes of care, incorporating case management, but were unable to draw firm conclusions due to mixed results and limited number of studies.

NICE QS10³⁸ recommends that all patients are offered access to a full range of smoking cessation services and support. The standard advises commissioners to agree with providers the periods for monitoring quit rates e.g. auditing 4 week quit rates. The NICE CG101⁴⁰ recommends a full smoking history is recorded.

Case study: Stop-smoking stickers at East Kent Hospitals University NHS Foundation Trust³⁵

The trust was aiming to address smoking related morbidity and premature mortality.

A stop smoking referral route was set up - all patients attending the outpatients departments at the various hospital sites in East Kent were supported to obtain stop-smoking advice. Outpatient notes had a smoking status sticker attached to inside back cover as an aide-memoire to ask about smoking status. If patient is a smoker, a brief intervention is provided by the staff member at booking and the patient is offered referral to the stop-smoking service.

9 months after the sticker introduction referrals to the stop-smoking service quadrupled from 206 to 834 when compared with the same 9 months in the previous year, and there was a statistically significant increase in the number of successful 4-week quitters

NICE CG101⁴⁰ recommends commissioning of pulmonary rehabilitation programmes including the monitoring of health outcomes. NICE QS10³⁸ recommends programmes are offered to all COPD patients who consider themselves functionally disabled by COPD; however it is not suitable for those unable to walk, with unstable angina or with a recent myocardial infarction. The guidance stresses the importance of programmes being offered at times and places suitable for and accessible by patients. It also emphasises the need for timeliness in making this available following referral. The guidance recommends a multidisciplinary and multi-component approach, including education, physical activity, nutrition, and behavioural interventions. It also highlights the need for patients to understand the level of commitment required to reap benefits.

The COPD Commissioning Guide³⁹ notes a recent study which showed that pulmonary rehabilitation can reduce readmissions within 3 months from a third to 7% of patients, stating that pulmonary rehabilitation is well below the NICE threshold for cost effectiveness, at £2000-£8000 per QALY, costing an estimated £152 per patient per programme.

Case study: Pulmonary rehabilitation, North East Lincolnshire HOPE Specialist Service³⁵

The service was experiencing low referral rates to pulmonary rehabilitation.

The service devised a one-stop shop for people with chronic respiratory diseases and older people at risk of falls. Multidisciplinary team including physiotherapists, a specialist nurse, an occupational therapist, a dietician, physiotherapy assistants. Patients are also supported by "Pulmonary Rehab Buddies".

For individuals completing the pulmonary rehabilitation programme, admission rates and bed-days in the 12 months following pulmonary rehabilitation fell by around 75% when compared with the 12 months preceding entry into the programme. These reductions in admission rates and bed-days were accompanied by improvements in patients' exercise capacity and patient satisfaction.

NICE QS10 recommends commissioning of a specialist oxygen service to assess those who may require long term oxygen therapy (LTOT). It also recommends an annual review as part of an integrated management; NICE guidance recommends this includes pulse oximetry. NICE CG101 also suggests that patients who are likely to benefit are:

- All patients with very severe airflow obstruction (FEV1 < 30% predicted)
- Patients with cyanosis
- Patients with polycythaemia
- Patients with peripheral oedema
- Patients with a raised jugular venous pressure
- Patients with oxygen saturations ≤ 92% breathing air

The guidance states that pulse oximetry should be available in all healthcare settings. The COPD Commissioning Guide³⁹ suggests that LTOT can improve survival rates by around 40%; however, 30% of those currently receiving therapy do not benefit from it, hence assessments are critical. The Guide cites a recent study showing that nationally, 15000 patients who receive oxygen therapy were found to have no recorded usage within a 6 month period, at an estimated cost of £13m per annum. PCTs which introduced an assessment service were able to make savings of up to 20% and ensure those who would benefit most are receiving therapy. Cranston et al⁴⁵ found LTOT was most effective in those with severe hypoxaemia. They found that survival did not appear improved for patients with mild to moderate hypoxaemia; a later review by Uronis et al (2011⁴⁶) found oxygen may relieve dyspnoea in mild and non-hypoxaemic patients but concluded evidence remains limited.

Case study: Home oxygen assessment and review service, Dudley PCT³⁵

The PCT was concerned by ad-hoc prescription of oxygen based on subjective judgement of need rather than the objective measurement of hypoxia.

A formal home oxygen assessment and review service as the single point of contact to ensure quality, consistency and appropriateness of oxygen prescribing. Sixty practices were provided with pulse oximeters so that patients with oxygen saturation below 92% could be routinely identified. Those identified are referred and undergo a structured assessment and prescription of oxygen in line with the British Thoracic Society guidelines.

The PCT was able to demonstrate net savings of £116,382.

NICE guidance recommends patients are assessed for anxiety and depression as part of the annual review. Coventry and Gellatly (2008⁴⁷) reviewed the use of cognitive behavioural therapy (CBT) for COPD patients with anxiety and depression, concluding there is some, limited, evidence that CBT, used with exercise and education, may significantly reduce anxiety and depression in patients with clinically stable, severe COPD. Not all results reported were statistically significant leading the authors to suggest an adequately powered randomised controlled trial is needed.

NICE QS10³⁸ states that pneumococcal vaccination and an annual influenza vaccination should be offered to all patients in line with public health guidance.

There have been a number of case studies reporting on their use of care bundles and CQUINs to improve care for patients with COPD. Hopkinson et al (2011⁴⁸) report on their work in London, where referral to pulmonary rehabilitation increased by 158% and compliance with assessment for smoking cessation was 100%. The 30-day readmission rate was 10.8% for patients where the bundle was used compared to 16.4% where it was not (95% CI for difference 2.1% to 13.2%). Key elements included:

- Respiratory nurse notified of all admissions
- Smoking cessation offered to patients who smoke
- Refer for pulmonary rehabilitation
- Provide written educational information to patients, including self-management, oxygen alert, patient support
- Inhaler technique training
- During admission, follow up with specialist arranged before discharge (median readmission 38 days after discharge)


Matthews et al (2013⁴⁹) describe how care bundles have been used at James Paget Hospital in Norfolk as part of the BTS's Care Bundle project. Their baseline for readmissions was 23.21%; 12 months following introduction of the care bundle, this had reduced to 17.78%, representing a 23.4% reduction in real terms. The key elements are copied below:

INFORMATION IN THE CARE BUNDLE	
<ul style="list-style-type: none"> ● Patient demographics ● Date of referral ● Seen within two working days by respiratory nurse specialist ● Confirmed or presumed COPD ● Spirometry result (to confirm diagnosis) ● Smoking history and referral to smoking cessation/refusal ● Pulmonary rehabilitation referral/refusal ● Usual or current Medical Research Council dyspnoea scale score 	<ul style="list-style-type: none"> ● CAT score (COPD assessment tool) ● Information given (BLF <i>Living with COPD</i> booklet and BLF <i>From Hospital to Home</i> booklet) ● Local Breathe Easy (support group) leaflet ● Patient checklist to ensure they were involved in their care ● Management plan and SOS pack ● Oxygen alert card issued/existing/not required ● Inhaler techniques, whether satisfactory or not. Satisfactory after tuition or change of device ● Follow-up with consultant/GP/matron/community RNS

TABLE 7 – LIST OF INFORMATION INCLUDED IN COPD CARE BUNDLE BY MATTHEWS ET AL.


The University Hospitals of Leicester NHS Trust has also recently reported on their experiences⁵⁰; the protocol used is copied below:

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) DISCHARGE CARE BUNDLE



NIHR CLAHRC
Leicestershire, Northamptonshire and Rutland (L.N.R)

University Hospitals of Leicester
NHS Trust



Patient Sticker

This care bundle is a group of evidence based interventions that should be delivered to all patients in preparation for discharge from hospital following an Acute Exacerbation of COPD. The COPD care bundle aims to improve quality of care, patient experience and reduce the risk of re-hospitalisation

PRIOR TO DISCHARGE	1. If patient is a smoker offer smoking cessation assistance via ICM.	Completed <input type="checkbox"/>	Declined <input type="checkbox"/>	N/A <input type="checkbox"/>	Sign Print Profession	Date	
	Has NRT been prescribed? <input type="checkbox"/> Yes <input type="checkbox"/> N/A						
	2. Pulmonary Rehabilitation - referral for assessment.	Completed <input type="checkbox"/>	Declined <input type="checkbox"/>	N/A <input type="checkbox"/>	Sign Print Profession	Date	
	3. Written COPD patient information given including: <ul style="list-style-type: none"> • SPACE Self Management manual given to patient by trained facilitator. <input type="checkbox"/> Yes For patients with sensory impairment, consider appropriate alternatives (DVD's and audio). <input type="checkbox"/> Yes <input type="checkbox"/> Declined • Information about the Breathe Easy Group. <input type="checkbox"/> Yes <input type="checkbox"/> Declined 					Sign Print Profession	Date
	4. Satisfactory use of inhalers and nebulisers demonstrated and understood. Please assess during medication rounds. Observe the patients using the device(s).	Completed <input type="checkbox"/>				Sign Print Profession	Date
	5. Patient aware of telephone call within 48 hrs of discharge.	Completed <input type="checkbox"/>	N/A <input type="checkbox"/>		Sign Print Profession	Date	
	6. Outpatient follow up discussed.	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>		Profession	Date	
7. I (patient) can confirm that all items on this checklist have been discussed, explained and understood					Patient's Signature	Date	

FIGURE 27 – PROTOCOL USED IN COPD CARE BUNDLE FOR LEICESTER HOSPITALS

Education and self-management

NICE QS10³⁸ recommends the use of personalised management plans including high quality information and education materials to help patients familiarise themselves with the condition as well as its management, depending on their stage of the disease. The standard recommends the following content for educational materials:

- Disease education
- Dyspnoea/symptom management, including chest clearance techniques
- Smoking cessation
- Energy conservation/pacing
- Nutritional advice
- Managing travel
- Benefits system and disabled parking badges
- Advance directives (living wills)
- Making a change plan
- Anxiety management
- Goal setting and rewards
- Relaxation
- Identifying and changing beliefs about exercise and health-related behaviours
- Loving relationships/sexuality
- Exacerbation management (when to seek help, self-management and decision making, coping with setbacks and relapses)
- Home care support
- Managing surgery (non-thoracic)
- The benefits of physical exercise
- Support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

Case study: Implementing the use of self-management plans, North East London, North Central London and Essex - Health, Innovation and Education Cluster (HIEC)²⁹

A problem was identified relating to High levels of COPD admissions and re-admissions.

The service developed strategies in order to distribute self-management plans and rescue medication packs to all patients discharged with COPD.

200 patients received discharge information and rescue medications in a six month period. Patients felt more 'empowered' to take control of their COPD as they were given the 'responsibility' to manage an acute exacerbation and after the self-management advice had more awareness of the signs and symptoms of an acute exacerbation .

NICE CG101⁴⁰ stresses the importance of materials written specifically for COPD patients and the need to acknowledge differing information and education needs depending on the stage of the disease. The guidance

also recommends that patients are given specific advice on what to do in the event of an exacerbation. NICE QS10³⁸ also suggests a named contact.

Case study: A systematic approach to implementing self-management action plans, Veor Surgery, Camborne, Cornwall²⁹

The practice developed a proactive project to discuss the use of self-management action plan with patients before winter months

20 specific COPD self-management clinics were set up, each offering six 30 minute appointments. Patients discussed self-management action for exacerbations in the run up to the winter period, antibiotics and steroids issued in line with local guidelines to all appropriate patients, the safety and impact of issuing rescue medication to patients in relation to untoward incidents, admissions and use of primary care evaluated.

122 patients were reviewed for the project, and 100 patients agreed self-management action plans during a three month period. Exacerbations during the severe winter period were 117 (60 in previous year) but admissions and GP appointments remained stable.

Admission

NICE QS10³⁸ recommends commissioners agree services which ensure people admitted to hospital with an exacerbation of COPD are cared for by a respiratory team, and that there is access to a specialist early supported discharge scheme with appropriate community support. The standard continues to recommend that commissioning of services should ensure patients with an exacerbation are promptly assessed. Prompt assessment and receipt of NIV is defined as: within 3 hours of presentation, and receipt of NIV within 1 hour of the decision being made to administer NIV.

Case study: Access to specialist care for patients with acute exacerbation of chronic obstructive pulmonary disease requiring hospital admission, Colchester Hospital University NHS Foundation Trust²⁹

The Trust was keen to identify opportunities for improvements needed in the care for COPD patients.

The Trust increased the proportion of patients with an acute exacerbation of COPD who receive specialist care in hospital and within six weeks post discharge. Changes that have been implemented include: early specialist review of COPD patients, inpatient care bundle, a written self-management plan in collaboration with community colleagues, which is given to all patients on discharge from the chest ward.

Early specialist review may impact on patients' length of stay for acute exacerbation of COPD. An inpatient care bundle for COPD may be an effective way to drive up the quality of patient care, reduce length of stay and reduce readmissions for exacerbation of COPD.

NICE CG101⁴⁰ suggests that recurrence of exacerbations can be minimised through the following:

- Self-management advice and education on what actions to take in the event of exacerbations
- Starting appropriate treatment with oral steroids and/or antibiotics
- Use of non-invasive ventilation when indicated
- Use of hospital-at-home or assisted-discharge schemes

Timeliness of treatment is echoed in the COPD Commissioning Guide³⁹: "*Prompt treatment at the onset of exacerbation symptoms has been shown to improve outcomes. It can result in less lung damage, faster recovery and fewer admissions (and subsequent readmissions) to hospital*".

The Commissioning Guide also recommends specialist respiratory physicians, quoting a recent audit suggesting that only 50% of patients admitted with COPD exacerbations are under a respiratory team. The Guide also recommends increasing the frequency of ward rounds to twice daily, as this has been shown to reduce length of stay with no adverse impact on mortality or readmissions. Early discharge and hospital at home are recommended as approaches to reduce length of stay and readmissions.

Lodewijckx C et al (2011⁵¹) reviewed studies evaluating care pathways for COPD exacerbations but were unable to draw robust conclusions as the number of studies was too small. One study reported a statistically significant reduction in length of stay but three other studies found no difference. There were no differences reported in relation to mortality, readmissions or complications.

Discharge

NICE QS10³⁸ recommends all patients admitted with an exacerbation are reviewed within 2 weeks of discharge. NICE CG101⁴⁰ recommends spirometry and restarting bronchodilator therapy before discharge. Where respiratory failure has occurred, oximetry or blood gas results should also be assessed. Information should be provided to patients and carers where appropriate and arrangements made for follow up and home care.

NICE guidance recommends hospital at home and assisted discharge schemes as safe and effective but acknowledges that evidence on criteria for selecting patients most likely to benefit is limited. The guidance also acknowledges the importance of patient preferences. The guidance emphasises the discharge team should be multidisciplinary including nurses, physiotherapists, occupational therapists among others.

Jeppeson et al (2012⁵²) reviewed 8 trials of hospital at home and concluded: "*Selected patients presenting to hospital emergency departments with acute exacerbations of COPD can be safely and successfully treated at home with support from respiratory nurses. We found evidence of moderate quality that hospital at home may be advantageous with respect to readmission rates in these patients. Treatment of acute exacerbation of COPD in hospital at home also show a trend towards reduced mortality rate when compared with conventional inpatient treatment, but these results did not reach statistical significance (moderate quality evidence). For other outcomes than readmission and mortality rate, we assessed the evidence to be of low or very low quality.*"

Vieira et al (2010⁵³) compared self-monitored home-based exercise to pulmonary rehabilitation to test if this would be an appropriate and effective alternative. Some positive findings were reported but the evidence base was generally too weak to draw firm conclusions. Thomas et al (2010⁵⁴) reviewed the effectiveness of home-based physiotherapy for those with severe COPD; inspiratory muscle training and exercise seemed to be effective but again the evidence was very limited to inform service planning.

There has been considerable interest in the potential of telehealthcare. Polisena et al (2010⁵⁵) concluded that home telehealth was generally clinically effective for COPD patients; no adverse events were reported; however, evidence on health services use was limited. Telemonitoring and telephone support were both

associated with lower admissions, emergency attendances and home visits. McLean et al (2011⁵⁶) also found an association with reduced service use; however, they noted significant variation across services therefore making it difficult to determine the critical factors.

Case study: Torbay Telehealth, Torbay and Southern Devon Health and Care NHS Trust²⁹

The largest proportion of patients with long term conditions admitted to A&E in Torbay in 2010 was those with COPD. In addition, community matrons and specialist nurses' caseloads were increasing, and it was considered essential that a project was undertaken to ensure they made the most effective use of their time and concentrate high quality care on those who need it the most.

A nine-month telehealth pilot was launched by Torbay Care Trust to help patients manage their conditions in their own homes and reduce the need for GP or hospital appointments. 75 monitors were installed in homes, with recordings monitored by a matron or nurse. A traffic light system was used to indicate follow up; green no assistance required, amber requires a phone call for more information and red requires investigation.

Between September 2010 and February 2011 a total of 36 interventions were recorded which meant the potential same number of GP / hospital admissions were avoided, saving an estimated £95,000 in NHS costs. The total cost to run the project was £78,805, and therefore cost avoidance exceeded the investment cost. Additionally popular with patients, with high satisfaction levels and high incidences of improved confidence.

Palliative care

NICE QS10³⁸ recommends commissioners ensure service provision for patients with advanced COPD which address their social, physical and emotional needs. It suggests that those who will benefit from palliative care will have:

- Severe airflow obstruction (FEV1 <30% predicted)
- Respiratory failure
- Low BMI (less than 19)
- House bound (MRC dyspnoea score 5)
- History of two or more admissions for exacerbations during the previous year
- Need for non-invasive ventilation for an acute exacerbation
- Eligibility for long-term home oxygen therapy

NICE CG101⁴⁰ recommends that patients with end-stage COPD be offered access to the full range of palliative care services, including hospices. It also recommends that patients disabled by COPD be offered social services assessment.

4.3.3 Overall findings for COPD

	Evidence base suggests effective	Evidence base suggests harmful or ineffective	Evidence base uncertain
Diagnosis	<p>Diagnosis confirmed with spirometry (calibrated equipment, trained professionals)</p> <p>At initial diagnosis, patients should also have:</p> <ul style="list-style-type: none"> • chest radiograph to exclude other pathologies • full blood count to identify anaemia/ polycythaemia • BMI calculated <p>Early diagnosis – spirometry in patients who are >35, current/ex-smokers, chronic cough</p>	<p>Screening using spirometry has high false positive rate - hundreds of patients would require screening to identify one person with COPD, for whom the incremental health benefit is likely to be limited.</p> <p>In most patients routine spirometric reversibility testing is not necessary as a part of the diagnostic process or to plan initial therapy with bronchodilators or corticosteroids.</p>	
Monitoring	<p>Multidisciplinary care including specialist respiratory nurses</p> <p>Integrated programmes of care</p> <p>Clinical and psychosocial assessments at least annually, including:</p> <ul style="list-style-type: none"> • BMI • degree of breathlessness • frequency/severity of exacerbations • health status • prognosis • hypoxaemia/need for oxygen therapy • presence of comorbidities • assessment for anxiety and depression • need for pulmonary rehabilitation • need for specialist/therapy services • inhaler technique • smoking status and desire to quit • post-bronchodilator spirometry <p>Home telehealth (telemonitoring/phone support)</p>		

Education / self-management	<p>Specific educational packages for COPD</p> <p>Packages take account of different needs of patients at different stages of disease</p> <p>Content of programmes:</p> <ul style="list-style-type: none"> • disease education • dyspnoea/symptom management • smoking cessation • energy conservation/pacing • nutritional advice • managing travel • benefits system/disabled parking • advance directives (living wills) • making a change plan • anxiety management • goal setting and rewards • relaxation • exercise and health-related behaviours • loving relationships/sexuality • exacerbation management • home care support • managing surgery (non-thoracic) • benefits of physical exercise • support groups 		
Admission	<p>Care led by specialist respiratory physicians</p> <p>Increasing frequency of consultant ward rounds</p> <p>Early discharge schemes/ hospital at home</p> <p>Self-management advice on responding promptly to the symptoms of an exacerbation</p> <p>COPD care bundles/CQUINs</p>		
Therapy	<p>Hospital at home for acute exacerbations</p> <p>Cognitive behavioural therapy, with exercise and education</p> <p>Airway clearance techniques</p> <p>Smoking cessation programmes particularly if combined with pharmacotherapy</p>		<p>Impact of COPD care pathways for in-hospital management of exacerbations</p> <p>Home oxygen therapy for patients with mild to moderate hypoxaemia or in those with only arterial desaturation at night</p>

	<p>Pulmonary rehabilitation after discharge</p> <ul style="list-style-type: none"> • Timed to suit patients, easy to get to/good access for those with disability, within reasonable time of referral • Multicomponent, multidisciplinary interventions, tailored to patient needs: physical training, disease education, nutrition and behavioural <p>Oxygen therapy</p> <ul style="list-style-type: none"> • Pulse oximetry available in all settings • Patients reviewed at least once per year including pulse oximetry • Review of oxygen registers, with formal assessment service • Long term therapy for severe hypoxaemia 		<p>Holistic care programmes</p> <p>Self-monitored home-based exercise training for patients with COPD as alternative to outpatient pulmonary rehabilitation</p> <p>Home-based physiotherapy interventions (inspiratory muscle training and exercise) during activities of daily living in severe COPD</p> <p>Breathing exercises</p> <p>Disease management</p>
Discharge	<p>Review within 2 weeks</p> <p>Spirometry and satisfactory oximetry/ arterial blood gas results before discharge</p> <p>Routine care assessment</p> <p>Information on correct use of medications, including oxygen, before discharge</p> <p>Arrangements for follow-up and home care made before discharge</p>		
Palliative care	<p>Access to full range of multidisciplinary services, including hospices (end-stage COPD)</p> <p>Patients disabled by COPD considered for referral for assessment by social services</p>		

TABLE 8 – SUMMARY OF EVIDENCE REGARDING SERVICE INTERVENTIONS FOR COPD

SUMMARY OF CHAPTER 4

NICE guidelines and Quality Standards provide a clear framework of good, evidence-based practice regarding both asthma and COPD. There is evidence for services in the domains of diagnosis, monitoring, self-management and education, admission, therapy, and discharge for COPD and asthma.

Local provision of different types of these services are discussed in chapter 5

5 CURRENT SERVICE PROVISION (INCLUDING SKILLS AUDIT OF PRIMARY CARE)

5.1 Primary Care (including skills available)

Figure 28 shows which skills are utilised by various members of the clinical team in primary care. Immediately clear differences seen include:

- A higher proportion of GPs in BSC and Solihull undertake asthma and COPD reviews than in BXC and SWB, though this seems to be counterbalanced by having fewer ANPs
- Where ANPs undertake reviews, they appear to be more likely to conduct other activities such as performing and interpreting spirometry, and prescribing medications
- HCAs undertake asthma and COPD reviews in some practices, particularly in BXC

Proportions add up to over 100% as the activities are not mutually exclusive between different roles. It is also important to note that some questions had lower response rates than others, which makes interpretation less meaningful.

It is not appropriate to link the skill-mix seen here with outcomes (demonstrated earlier) as it is unknown what timeframe the current skill-mix has been in place. However, there are apparent differences seen in the delivery of respiratory care in the local CCGs. The introduction of ANPs in primary care has occurred over the past decade; it seems likely that future models of care will incorporate them further in a primary care setting⁵⁷.

Of note is the fact that there appear to be some GPs that do not prescribe respiratory medications. It remains unclear if this is because some practices responded through team members such as practice nurses; the response may have been for that team member only. Heterogeneity in the way responses were completed such as this mean the results in this section need to be interpreted with caution.

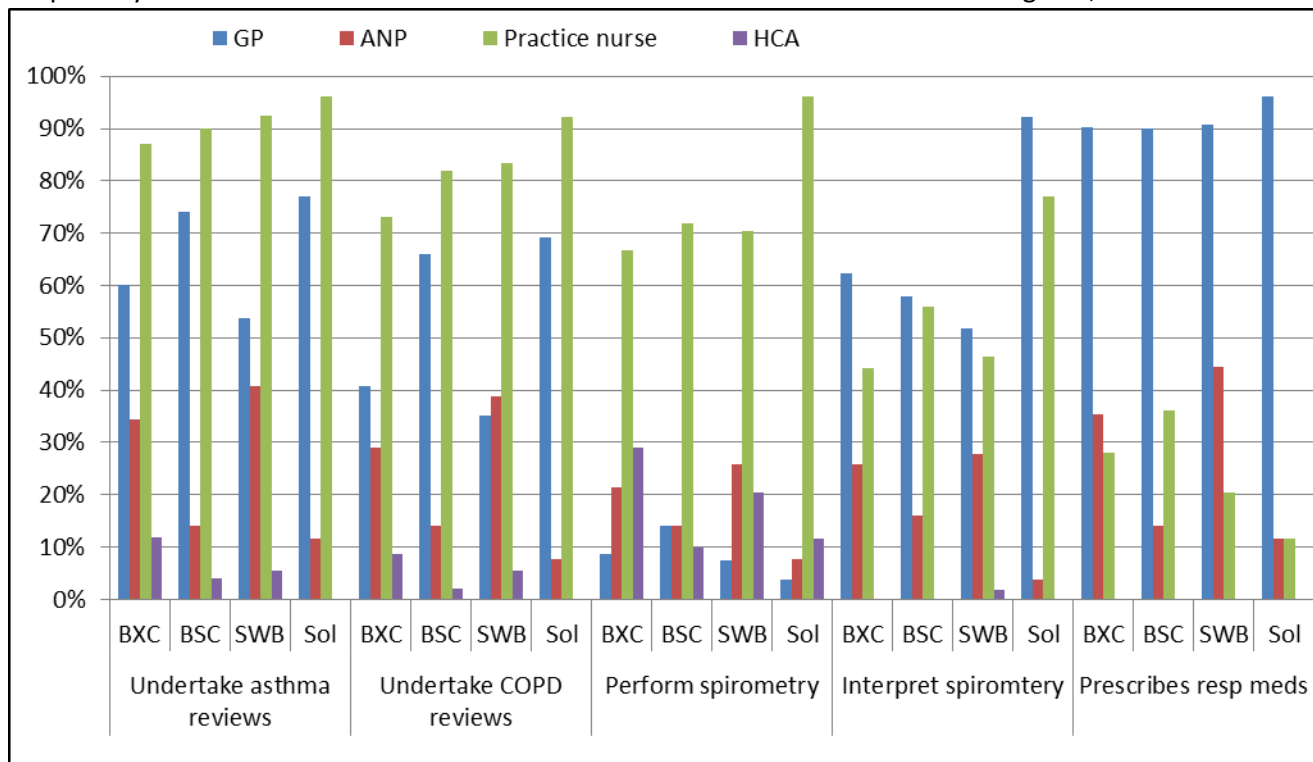


FIGURE 28 – PROPORTION OF PRACTICE ROLES THAT UNDERTAKE VARIOUS MANAGEMENT ASPECTS OF RESPIRATORY DISEASE, BY CCG, BY ACTIVITY

There does appear to be marked difference in the level of training that the principal asthma reviewer has received. There appear to be multiple responses from some practices from all CCGs; this may reflect more than 1 principal reviewer in each practice, with differences in training. It is unclear whether there is a difference in training depending on the clinical role (e.g. do ANPs have the higher asthma-specific qualifications?). Again, the variation implies there may be differences in the quality of care given, though this cannot be stated with certainty due having multiple entries from practices, and the fact that a qualification does not automatically mean better quality of care.

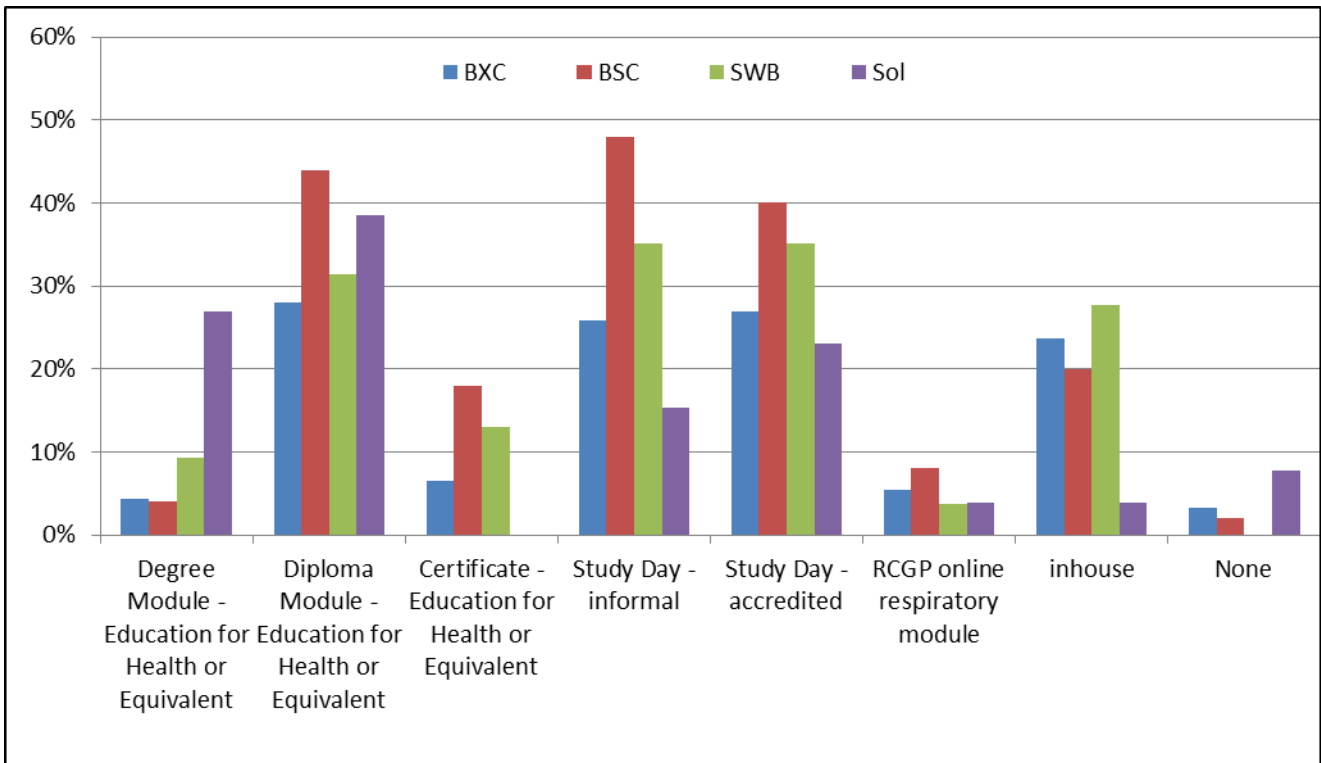


FIGURE 29 – LEVEL OF TRAINING OF PRINCIPAL ASTHMA REVIEWER, BY CCG (47 PRACTICES DID NOT RESPOND)

There appears to be further variation between CCGs in terms of the equipment available on site for managing COPD, both chronically and acutely (Figure 30). No more than 75% of practices in any CCG have various pieces of equipment that would be useful in COPD care. Particularly noteworthy is the fact that just under half of all practices do not have oxygen on the premises, in BXC and SWB CCGs. This may be due to many practices providing no response to this question, however all surgeries should ensure they have oxygen on site, as per BTS/SIGN guidelines⁵⁸.

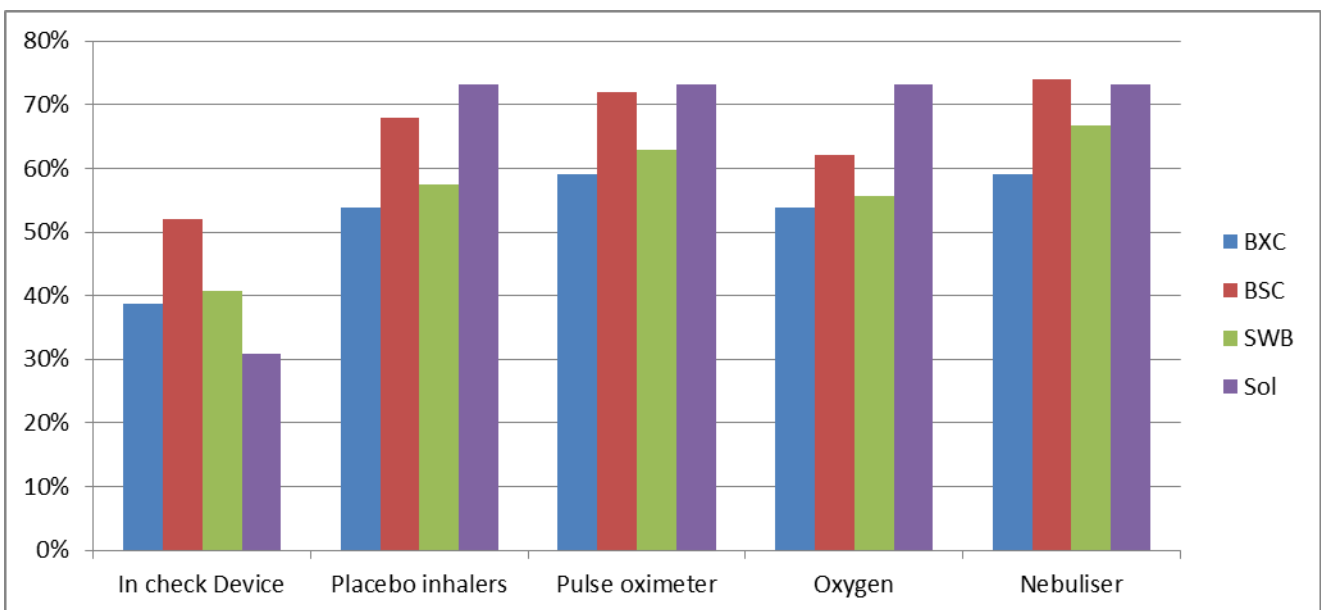


FIGURE 30 – ACCESS TO EQUIPMENT ON PREMISES, BY CCG

The proportion of staff performing and interpreting spirometry that are accredited by the Association for Respiratory Technology & Physiology (ARTP) is seen in Figure 31. BSC in particular appears to have a higher proportion of staff with ARTP accreditation than other CCGs, for both performing and interpreting. This is despite having a lower proportion of spirometry investigations being undertaken by ANPs than both BXC and SWB. The high number of ‘unknowns’ means that it is difficult to state with certainty the true proportions of practices providing this service; the assumption must be that ‘unknown’ practices fall into the ‘No’ group unless otherwise stated.

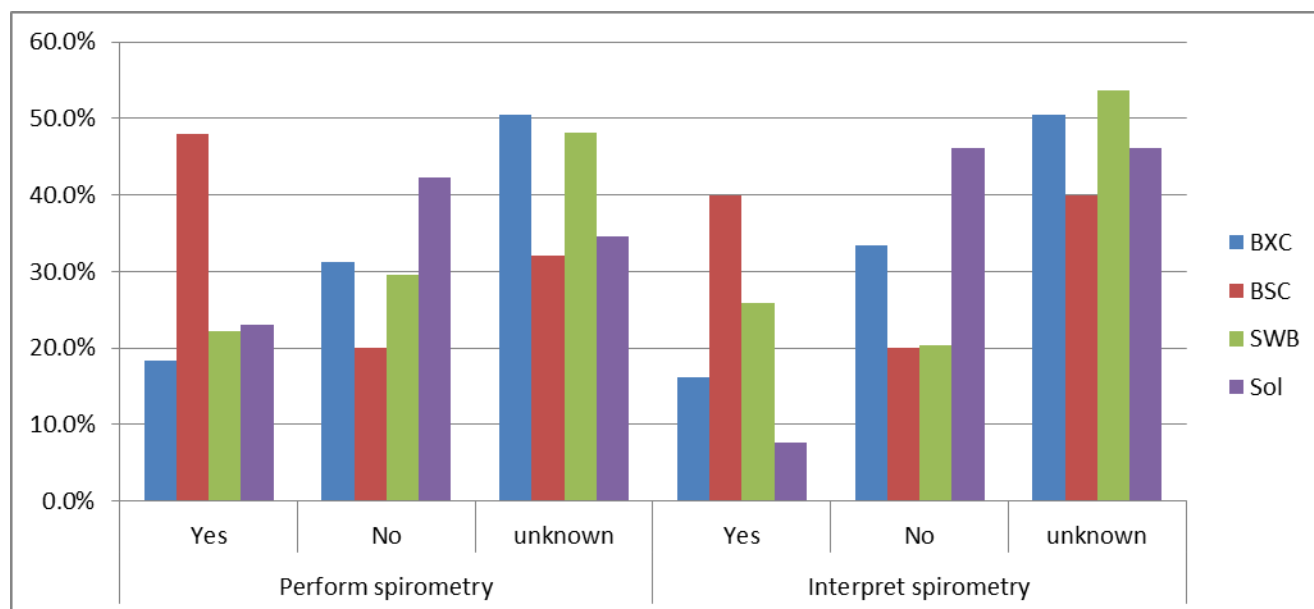


FIGURE 31 – PROPORTION OF PRACTITIONERS THAT PERFORM OR INTERPRET SPIROMETRY THAT ARE ARTP ACCREDITED

Across all CCGs, 88 practices stated that they provide COPD self-management plans, with a slightly higher number having asthma plans. Asthma plans are known to help people control their own asthma, and form part of the BTS guidelines. Asthma plans should therefore be provided for all patients who are receiving active therapy.

The amount of time spent on a COPD review is seen in Figure 32. As seen in the NICE Quality Standard for COPD, there is a large amount of activity to be carried out in this assessment; 10 minutes is unlikely to be adequate to cover the suggested management actions. In the absence of other information, those that did not answer must be assumed to have answered as up to 10 minutes (i.e. standard appointment length). Thus, at least 30% of all practices in the locality are apparently performing reviews in less than 10 minutes. Practices should be encouraged to work through the full COPD assessment where possible; re-measuring this data at a later date is advisable to see if review length changes over time, which may indicate best practice spreading across the locality.

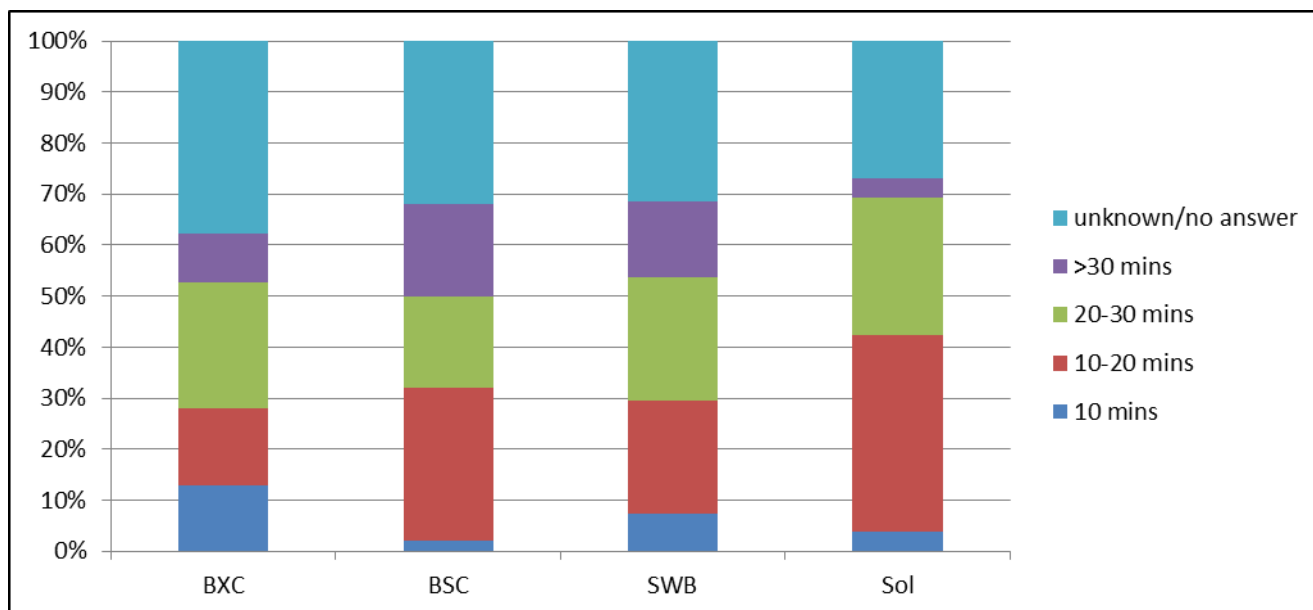


FIGURE 32 – LENGTH OF COPD REVIEW IN MINUTES, BY CCG

Figure 33 shows the length of time taken to perform spirometry in practices in the locality. The very high number of ‘no response’ suggests many practices do not perform spirometry, or that most practices failed to respond to this question. It is less meaningful to group such a large proportion of ‘unknown’ into another group as it is unclear how many practices perform spirometry. Again, repeating this question at a later date, with a stronger response rate may be useful to determine the adequacy of spirometry in primary care.

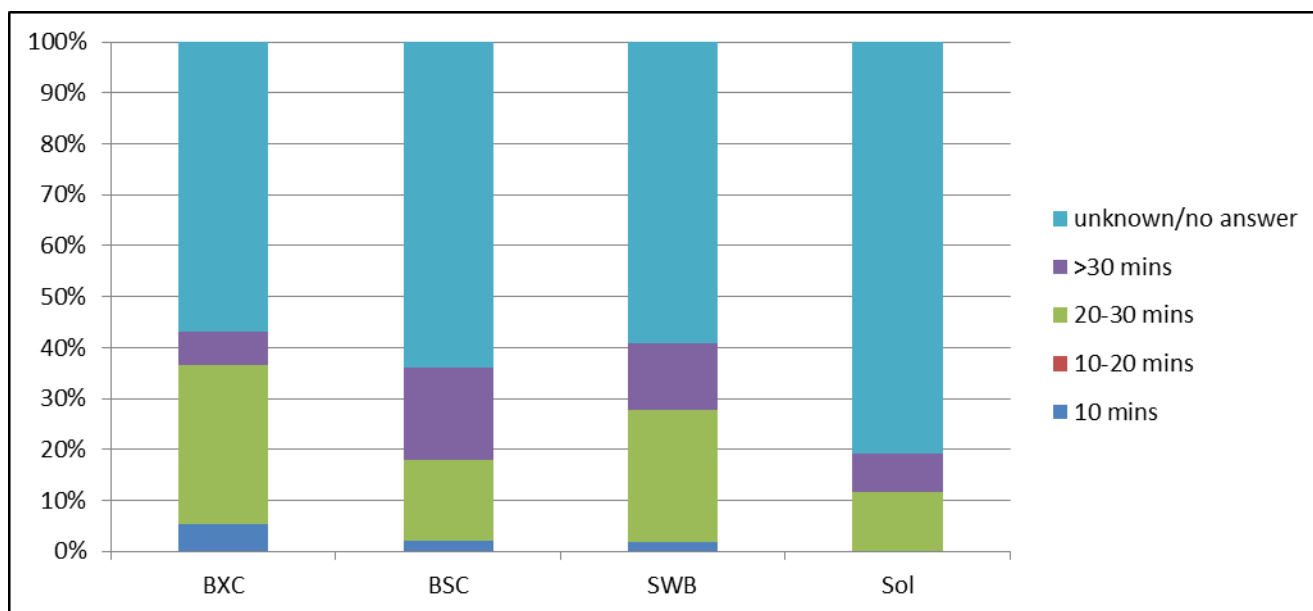


FIGURE 33 – LENGTH OF TIME TAKEN TO PERFORM SPIROMETRY IN PRACTICES, BY CCG

Figure 34 shows that around 1 in 5 practices hold or signpost patients to respiratory interest groups. Whilst this is not included in NICE guidelines or standards, it is good practice to help patients learn more about their

own condition, including non-respiratory conditions. In order to help patients become more empowered and able to care for themselves, such groups may need more encouragement and engagement to fulfil this aim.

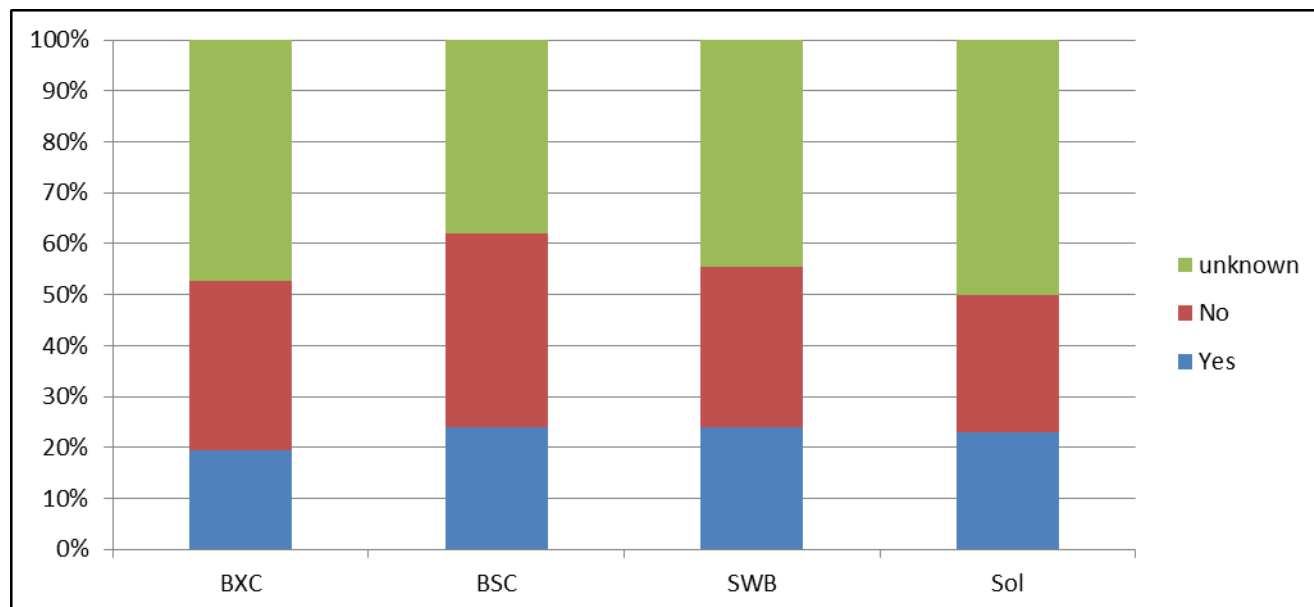


FIGURE 34 – PROPORTION OF PRACTICES THAT HOLD OR REFER PATIENTS TO RESPIRATORY INTEREST GROUPS

5.2 Primary Care Service Provision

Primary Care service provision can be broadly categorised into core provision as defined by the Quality & Outcomes Framework and additional services delivered through Local Enhanced Services (LES) or Local Improvement Schemes (LIS) commissioned by CCGs. This section of the review will focus on additional services commissioned from Primary Care by each CCG as it can be assumed that the vast majority of practices deliver the basic QOF requirements.

Birmingham South Central CCG

BSC CCG commissions an enhanced service for COPD and Asthma from its member practices (Respiratory Quality Improvement Programme). Under this scheme practices are required to deliver the NICE Quality Standards for COPD and Asthma by delivering 12 evidence based interventions for COPD & Asthma:

COPD

1. Patients should be provided with a written self-management plan and this plan should be filed electronically within the patients clinical record
2. COPD related hospital admissions should be recorded and monitored by an in-practice follow-up appointment
3. The severity of COPD should be stratified and recorded within the patient's clinical record. Severity should be stratified using the COPD Assessment Test (CATest) and a copy should be filed electronically within the patients clinical record
4. A measure of oxygen saturation (SaO₂) should be taken and recorded
5. A referral for Long-term Oxygen Therapy (LTOT) should be made where the patient's SaO₂ level is persistently below 92%
6. A referral for Pulmonary Rehabilitation should be made where patients have an MRC breathlessness scale score of 3 or more in stable COPD patients
7. A depression assessment should be conducted for all COPD patients

Asthma

1. Patients should be provided with a written self-management plan and a copy of this plan should be filed within the patients clinical record
2. Asthma related hospital admissions should be recorded and monitored by an in-practice follow-up appointment
3. The asthma control test (ACT) should be conducted at least once, annually and a copy should be filed electronically within the patients clinical record
4. Patients who have had an exacerbation but not requiring hospital admission should be monitored by an in-practice follow-up appointment
5. History of allergic (if present) or any history of allergic rhinitis should be recorded for all patients

In addition, all practices are required to participate in 2 mandatory training workshops for management of COPD and Asthma.

Solihull CCG

There is currently no primary care enhanced service provision for COPD and Asthma within Solihull CCG.

Sandwell & West Birmingham CCG

There is currently no primary care enhanced service provision for COPD and Asthma within Sandwell & West Birmingham CCG.

Birmingham Cross-City CCG

BCC CCG currently operates a local enhanced service (LES) for COPD. The LES has been inherited by the CCG from South Birmingham PCT, consequently, only 27% of practices are signed up to deliver this service. The requirements of the scheme include:

1. Diagnosing COPD in primary care by performing spirometry in the practice.
2. Promoting appropriate use of specialist lung function testing via referral to the Lung Function Unit.
3. Grading the severity of the disease of all new patients according to the percentage predicted FEV1 and re-grading any existing patients using NICE guidance 2004.
4. Actioning the therapeutic thresholds
5. Performing an audit of the practice COPD register on an annual basis
6. Promoting the development of specialisation in Primary Care through attending training days or recognised courses.

BCC CCG plan to replace this scheme with a more comprehensive programme for COPD and Asthma diagnosis and management from October 2013. The new developments will be embedded into the CCG's Aspiring to Clinical Excellence (ACE) programme and will focus on implementing the NICE Quality Standards for COPD and Asthma, and ensuring patients receive quality assured spirometry within primary care.

5.3 Community Care Service Provision

The map on the following page shows the locations of community respiratory services and secondary care providers in the local area. This overlays asthma and COPD admissions to a small area level. The lack of community services in areas of apparently high admissions rates – North Solihull and North-West Sandwell, may indicate need for more respiratory services.

The map highlights the variation in admissions rates across the region, though the data does also reflect the fact that population demographics are likely to be very different between many of these small areas (in terms of age, ethnicity, deprivation in particular).

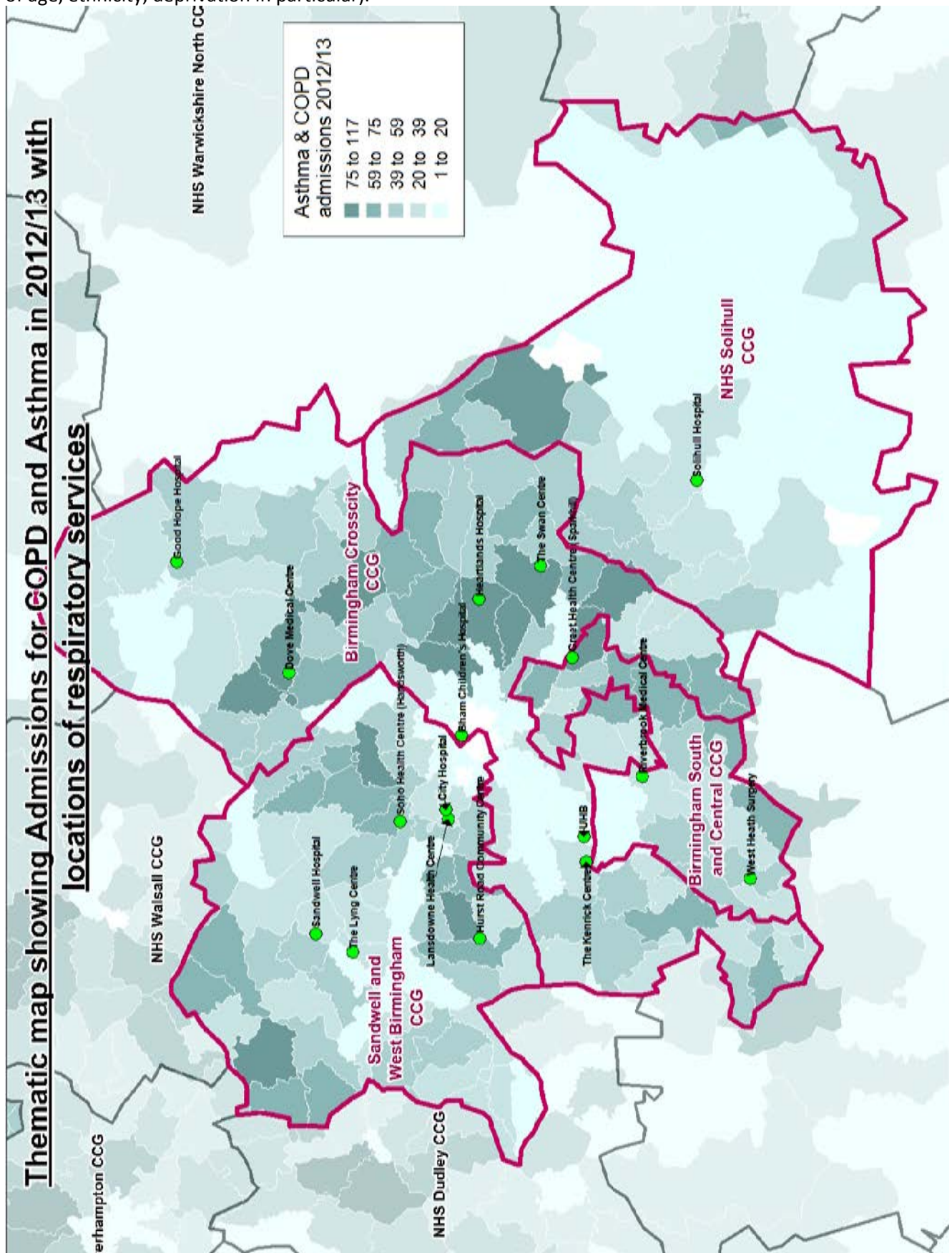


FIGURE 35 – CCG MAP SHOWING LOCATION OF RESPIRATORY SERVICES IN COMMUNITY AND SECONDARY CARE, OVERLAYED WITH ADMISSIONS FOR COPD AND ASTHMA IN 2012/13

Birmingham Community Healthcare Trust (BCHCT)

Service Overview

The BCHCT Community Respiratory Service can be broadly categorised into 4 main components:

Admission Avoidance & Assisted Discharge Service

The Admission Avoidance and Assisted Discharge Service provides access for adults with chronic asthma, COPD and bronchiectasis to deliver active care management when their condition is unstable, delivered within the patient's home environment by a specialist multi-disciplinary team. The service aims to support reductions in length of hospital stay using in-reach strategies.

Pulmonary Rehabilitation (PR)

BCHCT offer a community-based PR programme accessible to patients are functionally disabled by their condition, and who require a health care professional assessment and supervision of exercise training, rather than simple advice on lifestyle changes. The programme is also offered to patients with a confirmed diagnosis of COPD and other chronic progressive lung conditions (e.g. bronchiectasis, interstitial lung disease, chronic asthma and chest wall disease patients who have either recently had an exacerbation of COPD requiring a hospital admission or whose functional baseline has significantly altered and is not following the expected recovery path.

Community Respiratory Clinic

The Community Respiratory Clinic supports primary care health professionals in diagnosing and managing respiratory disease by confirming a diagnosis of asthma/COPD, where suspected or uncertain, optimising treatment/management where the patient's condition is poorly controlled or unstable and empowering patients to self-manage their condition, therefore minimising exacerbations and hospital admissions.

Primary Care Education & Support

The Primary Care Education and Support Service aims to help up-skill Primary Care staff in managing respiratory disease through coaching, advice and education. The service is accessible to primary care staff in need of advice and support in managing complex patients. The service also provides support in educating primary care staff on the latest national guidance in managing respiratory disease at learning events, where requested.

The BCHCT Community Respiratory Service offers a range of investigations including:

- Spirometry +/- reversibility
- Direct access chest x-rays
- Direct access to Full Lung Function including gas transfer & CT scans

The service also supports patients on NIV and oxygen as part of their overall care management. BCHCT deliver services from a range of community locations in Birmingham including Soho Health Centre (Handsworth), Greet Health Centre (Sparkhill), Lansdowne Health Centre (Winson Green), Dove Medical Centre (Erdington) and the Swan Centre (Yardley). In addition, PR clinics are delivered from the Church Hall in Sparkhill, and BCHCT's 'in-reach' services operate from City Hospital and Heartlands Hospital Birmingham.

Contract Value/Activity:

Service Area	2012/13 Activity
Admission & Avoidance & Assisted Discharge	3,116
Pulmonary Rehabilitation	3,400
Respiratory Clinic	1,633

The contract value for BCHC is around £964k per annum

Additional Services

BCHCT are currently working collaboratively with John Taylor Hospice to deliver a fatigue, anxiety and breathlessness clinic. This project has been identified as an area of good practice through the West Midlands Quality Review (WMQRS) and BCHCT were subsequently invited to the Best Practice Sharing Event in June 2013 to present this service area. The service has been promoted as one of the Best Practice service areas in the West Midlands on the WMQRS website.

Areas of Best Practice:

1. Multidisciplinary Team consisting of Respiratory Physiotherapists, Respiratory Nurse Specialists, Health Care Support and Link Workers with sessional input from a GPwSI. Respiratory Nurse Specialist with a Child Health/Health Visiting background which contributes to the needs around transitional care for asthma.
2. Knowledge base/skills/competency related to a range of respiratory disease areas including COPD, Asthma & Bronchiectasis.
3. Significant experience within the service of working within Acute/Community & Primary Care.
4. Links with the internal Trust IV Therapy Team and wider community teams enabling cohesive support for patients with a number of LTCs.
5. Local intelligence of the needs of the local population and related Public Health report evidence.
6. Significant experience of working with the diverse local population.
7. Respect of service users through experience of the service which has created a very positive service reputation.
8. Fully integrated Assisted Discharge pathway with City Hospital including an identified Respiratory Consultant who leads clinical case discussions of more complex patients on caseload. Inclusion in Respiratory Clinical Meetings and Respiratory Directorate Meetings @ City Hospital to facilitate the maintenance of full collaboration/integrated patient pathway.
9. Collaboration with John Taylor Hospice through the Fatigue, Anxiety & Breathlessness Clinic with access to a Psychologist.
10. Flexibility and resilience due to the breadth of skills across team members irrelevant of role/professional group.

Areas for Improvement:

1. Expansion of the current Community Respiratory Service model and IV therapy across the city to deliver equitable provision
2. Delivering standardised and consistent approach to the delivery of Respiratory Care across Birmingham and the surrounding area to ensure equity of provision and access to patients. This would extend to areas such as patient resources and other essential interdependencies.
3. The above may be achieved by sharing good practice and the experience from the utilisation of the Assisted Discharge pathway in operation with SWBH at City hospital for example whereby although an acute/community provider involved, the patient pathway and subsequent patient journey is fully integrated. Currently building on this good practice with HEFT and could be replicated in any area.
4. Building on the current links with BCHCT Integrated Multidisciplinary Teams by maintaining the specialist respiratory model and intervention required on the patient pathway, but defining further its link with the wider community services within BCHCT and developing this incorporating out of hours.
5. Development of primary care support through implementation of tools such as the Respiratory Quality Improvement Programme currently in use by BSC CCG. The BCHCT Community Respiratory Service in the C&W area were involved in the development and implementation of this, led by the Lead Respiratory GP within the former HoB PCT when implemented as a Locally Enhanced Service initiative
6. Inequity in service provision due to historical PCT boundaries

South Doc Services (SDS)

Service Overview

South Doc Services (SDS) provide Pulmonary Rehabilitation (PR) services within a community-based setting. The service was commissioned by the former South Birmingham PCT and therefore covers a proportion of Birmingham-Cross City CCG and a proportion of Birmingham South Central CCG. The service provides a six week programme for patients consisting of 2 sessions per week and is aligned with NICE guidance for the management of patients with respiratory related conditions. The service is provided across 3 community locations including the Kenrick Centre (Harborne), Riverbrook Medical Centre (King's Heath) and West Heath Surgery (Northfield). Referrals are accepted from GPs, community teams, secondary care and self-referrals from patients and carers.

Contract Value & Activity:

Service Area	2012/13 Activity
Pulmonary Rehabilitation	158

The contract value for SDS is around £123k per annum

Areas of Best Practice:

1. Birmingham South Central CCG have a local scheme in place which incentivises practices to refer patients to PR
2. Good working relationships with local clinical teams e.g. UHB. There are strong links with the Oxygen service at UHB.
3. Patient compliance is similar to the national compliance (e.g. around 50% drop out of the service).
4. Patient experience post rehabilitation is very good
5. Patients are contacted 6 months post therapy to ascertain if they are maintaining their exercise regime, review their health and if they have had any hospital admissions post discharge.
6. Patients are contacted to request their involvement in EXPERT patient programmes to support, motivate and encourage other patients.

Areas for Improvement:

1. The quality of the referrals e.g. referrals are often missing important clinical history
2. Some patients are unaware of the reason for their referral to PR and the requirements/commitments of the programme
3. Some patients are not on optimal therapy at the time of referral
4. Raise awareness of the benefits of PR across primary care
5. Inequity in service provision due to historical PCT boundaries

Sandwell & West Birmingham Community Service

Service Overview

The Sandwell community service delivers a holistic community respiratory service which is delivered by an MDT, seven days a week including bank holidays. The service is staffed by six nurses (one vacant post), two occupational therapists (one vacant post), 0.6 WTE dieticians, five physiotherapists (one rotational), six Health care assistants, three administrators and a 0.5 WTE manager

The service provides the following;

- Diagnostic Investigation - including spirometry and oxygen clinics
- Oxygen Assessment and Avoidance
- Admission Avoidance

- Assisted Discharge
- End of Life Care
- Pulmonary Rehabilitation
- Education of patients
- Specialist Nurse clinics

The main base is the Lyng health Centre (West Bromwich). Home visits are offered to patients who are housebound. Spirometry and pulmonary rehabilitation is provided in different locations. Spirometry is sometimes provided in a patient's home. Oxygen services are delivered from The Lyng only.

The service is available to all patients who are registered with a Sandwell GP as long as the patients live within 3 miles of the Sandwell border. This is because home visits then become problematic if staff have to travel to the patient.

Nursing and physiotherapy is provided 8am to 8pm, Monday to Friday as is assisted discharge and admission avoidance. Occupational therapy and dietetics is provided 8.30 to 4.30 Monday to Friday. Emergency patients are seen on a Saturday/Sunday if needed. The service runs 8.30 to 4.30 on bank Holidays.

Activity:

Service Area	2012/13 Activity
Sandwell Community Service Contacts	30,000

The contract value for the Sandwell community respiratory service is £1,194,714 per annum

Additional Services:

- Occupational therapy and dietetic support, advice and treatment
- Breatheasy and Weatherwise

Areas of Best Practice:

- The team is multi-disciplinary and multi skilled so can interchange roles.
- The service is open seven days a week which works well for patients.
- The referral system is easy and patients can self-refer if they are already known to the service. This is helpful if the patient is exacerbating – they can be given the necessary help and medication. This keeps them from attending A+E unnecessarily.
- The community team works closely with secondary care colleagues and there is a named consultant (Dr Imitez Ahmed) who is based in the trust. This ensures a robust governance process.
- The service has never had to cancel a clinic.
- The Community service has access to the Trust clinical Data Archive which helps with continuity of care.

Areas for Improvement:

- The provider could offer more services e.g. a breathlessness clinic which would offer self-management of breathing through peer support.
- The service would benefit from a NIV (non-invasive ventilation) support to patients – it would require more support at home for patients but could lead to a reduction in hospital admissions.
- Better links with social care.
- Referrals to other providers if outside the area could be better (e.g. cares, rehab)
- Access to primary care patient records.

Heart of England Foundation Trust Community Services

Service Overview

The Community Respiratory Team is a multidisciplinary team providing specialist care and advice to adult patients with non-malignant respiratory disease namely; COPD, Bronchiectasis, Interstitial Lung disease/Pulmonary fibrosis and unstable asthma. The service provides nurse and physiotherapy clinics across Solihull as well as visiting patients in their own homes. The service actively works with both Solihull and Heartlands hospitals ensuring safe and effective discharge from hospital with a structured follow up visit post discharge. The service offers pulmonary rehabilitation to any respiratory patient who is symptomatic with an MRC dyspnoea score <3.

- Diagnostic Intervention; spirometry/blood gases,
- CBGs by IV nurses for respiratory patients
- HOS-AR; initial 1 month, 3 month, 6 months
- Admission avoidance in Heartlands and Solihull hospital
- Supported discharge
- Liaise with Macmillan, Marie curie (Home visits as part of pulmonary rehab)
- Pulmonary rehab and maintenance programme
- Education
- Pilot project in Telehealth

Areas of Best Practice:

- HOS-AR
- Supported early discharge

Areas for Improvement

- Patients discharge from secondary care does not always get fed to community team

Contract

Block 12 months ending 31/3/14

Activity Plan	Value
Plan – 496 F2F, non F2F contacts 353, first to follow up review contacts: 3,804	£612,285 (13/14)

5.4 Secondary Care Service Provision

Birmingham Children's Hospital (BCH)

Service Overview

The Birmingham Children's Hospital (BCH) has a team of doctors, specialist nurses, physiotherapists, dieticians and scientists that investigate and manage acute and chronic lung disease or complex respiratory conditions. These include asthma, cystic fibrosis, chronic lung disease of prematurity and primary ciliary dyskinesia.

BCH has around 20-25 respiratory specific patients, but also support cross-specialty where required e.g. Neurology with neuro-muscular conditions; cardiology with respiratory complications etc.

The respiratory services offered by BCH include:

- Cystic Fibrosis screening in newborns
- Bronchoscopy
- Lung function testing
- Sleep studies
- General respiratory service for oxygen dependent patients
- Support to Royal Orthopaedic Hospitals (ROH) Birmingham for children with respiratory complications following spinal injury/surgery
- In-house and domiciliary oxygen assessment

Activity:

Service Area	2012/13 Activity
COPD Inpatients	6
Asthma Inpatients	640
Outpatients	1,051

Additional Services:

BCH is currently delivering a pilot project to improve the management of patients with complex needs. The pilot aims to reduce hospital length of stay for patients on the complex care pathway. There has been a dedicated care/case manager assigned to review cases where there has been a delay in discharge.

Areas of Best Practice:

1. Dedicated respiratory team
2. The service is accessible at all times
3. Collaborative working and engagement across internal specialties
4. Discharge planning processes

Areas for Improvement:

1. Transition in pathways between social care and ongoing care in the community
2. Transition of long-term ventilated patients – treatment was previously provided by HEFT but will now move to Stoke so will cause accessibility issues for patients
3. Streamlined pathways and standards between different providers in the care pathway e.g. notification process of onward care.
4. A system of holding providers to account when they are preventing patients from being discharged in a timely manner
5. BCH would like to manage the entire pathway to reduce the anomalies and risks to patients
6. Introduction of a Directory of Services to identify other service providers quickly and signpost patients better

University Hospitals Birmingham (UHB)

Service Overview

The UHB Respiratory Department currently includes ten consultant respiratory physicians and a consultant clinical scientist whom offer a full range of Respiratory services. Specialist clinics are available for the following conditions:

- Alpha-1-antitrypsin deficiency
- Asthma
- Bronchiectasis
- Chronic Obstructive Pulmonary Disease
- Interstitial Lung Disease (Pulmonary Fibrosis)
- Lung Cancer
- Lung Transplantation
- Occupational and environmental lung disease
- Oxygen
- Sleep Apnoea and Lung Failure

The Lung Function and Sleep department provides a full range of routine and specialist investigations, with outreach support to the clinics. Specialist tests include oxygen assessments, bronchial challenge and skin testing for asthma, respiratory muscle testing, sleep studies, and full cardiopulmonary exercise testing. General Practitioners are able to request a number of tests directly. The Lung Function and Sleep department also provide a range of therapies including oxygen treatment, nebuliser issue, CPAP, home ventilation and pulmonary rehabilitation.

The respiratory department also has access to multiple CT and MRI scanners, dedicated lung cytology and histology services, and a full microbiological service. Bronchoscopy, including endobronchial ultrasound, and local anaesthetic thoracoscopy are also provided.

There are two lung cancer specialist nurses and a dedicated COPD support service, including both nursing and therapy support who do outreach community work as well as inpatient work.

Activity:

Service Area	2012/13 Activity
COPD Inpatients	737
Asthma Inpatients	222
Outpatients	2,215

Additional Services:

UHB are currently participating in a number of pilot projects, these include the following:

- COPD discharge bundle
- Piloting an educational tool
- AEPTD
- Asthma Care Bundle offered
- Consultant-led MDT COPD ward round being piloted on Wednesdays

Areas of Best Practice:

1. Respiratory support team and impact this has had on KPIs for the trust
2. Oxygen service as it covers both assessments and reviews
3. One-stop MDT COPD Clinic

Areas for Improvement:

1. Timely access to Pulmonary Rehabilitation within the community
2. Better community support for patients on non-invasive ventilation
3. More integration between primary, community and secondary care services
4. In-house smoking cessation service
5. Timely access to reports from community PR providers
6. Better access to information about Oxygen use at CCG level
7. NIV support from Rapid Response teams
8. Improved cover within primary care and the community over weekends and bank holidays
9. Out of hours support for patients discharged via early supported discharge service

Sandwell & West Birmingham Hospitals (SWBH)**Service Overview**

SWBH sees patients with COPD, asthma, lung cancer, TB, bronchiectasis, cough, sleep dyspnoea. The core business of the service is to provide expertise in a range of respiratory areas and to provide specialist diagnostics including a growth in diagnostics for example, thoracoscopy.

The service is an experienced MDT with expertise in respiratory medicine comprising a team including consultants, nurses and other specialists. The service focuses on admission avoidance, early discharge, improving early discharge and integrated pathways.

The service provides the following;

- Screening for TB
- Diagnostic Investigation - for the whole respiratory physiology department. Sleep studies, CPAP – non-invasive ventilation), bronchoscopy, thoracoscopy, spirometry, lung biopsy
- NIV therapy for PEG insertions. Patients used to have to go to stoke for this service.
- IV therapy
- Oxygen Assessment and avoidance
- Admission Avoidance Use the acute CNS for admission avoidance. There are more nurses on the Sandwell side than at City. The CNS sees patients in hot clinics.
- End of Life Care
- Education of patients CNS educates patients – host inhaler clinics
- Specialist Nurse/ GPwSI There are a team of specialist acute respiratory nurses, TB nurses and lung cancer nurses

The majority of services are held at either the Sandwell or City sites of the Trust. All community activity is picked up by the community team. The Trust doesn't provide any respiratory clinics at Rowley Regis but a clinician does travel there to see patients as and when required.

Activity:

Service Area	2012/13 Activity
COPD Inpatients	943
Asthma Inpatients	984
Outpatients	3,125

Additional Services

The Cough campaign has led to a 30% increase in referrals but no increased cancer rate. Extra clinics were put on to address this.

There is a procedure bed on ward p5 in Sandwell and this is mainly for thoracoscopy (sees 4-5 patients a week for overnight/day cases). The bed is protected for these patients in the week.

Areas of Best Practice:

- Expertise within the specialised areas.
- Multi-disciplinary team approach which has a seamless exchange with the community team in Sandwell. The interaction with other providers of community care (Birmingham Community Healthcare Trust) is also good
- New to follow up ratios are below average

Areas for Improvement:

- The quality of referrals into the service
- Communication could be improved by having access to forums where better communication could be established with other providers
- Better understanding of who is doing what locally to allow sharing of best practice
- Better mechanisms to feedback around commissioning issues
- More interaction with GPs

Heart of England Foundation Trust (HEFT)

HEFT includes Birmingham Heartlands Hospital, Solihull Hospital and Community Services, Good Hope Hospital and Birmingham Chest Clinic. There are 15 consultants each specialising in respiratory related conditions and along with their medical teams which include respiratory lead CNS investigate and manage complex respiratory conditions. As well as providing Respiratory and General Medical outpatient clinics and inpatient facilities they have:

- A recognised Occupational Lung Disease Service
- Tertiary specialised Severe and Brittle Asthma Referral Centre
- West Midlands Adult Cystic Fibrosis Centre
- Regional Specialised Sleep Disordered Breathing and Ventilation Service – offering a full range of diagnostic studies for sleep disorders including inpatient polysomnography, sleep latency testing, home multichannel sleep monitoring and overnight oximetry. Weekly clinics for respiratory and neurological sleep conditions and provide diagnosis, treatment and follow up care, including annual reviews for appropriate groups and ‘open access’ to medical support for suitable patients. We provide CPAP, ASV and NIV therapy, including setting up, servicing and consumables, as well as advising on pharmacological therapies provided in partnership with primary care
- Respiratory Physiology
- Bronchoscopy
- Specialised Tuberculosis Aftercare and BCG Service at Birmingham Chest Clinic
- The Respiratory Investigation Department at Good Hope Hospital
- HOT clinics – these clinics provide a means for GP’s to refer in patients for a rapid assessment of patients as a means of admission avoidance. (run weekly at BHH).
- day case pleural aspiration service, which is open to GP’s

- Nurse led asthma clinics for education and concordance, alert cards and management plans, full diagnostics including provocation testing, allergy testing, exhaled NO, sputum analysis impedance oscillometry and full lung functions as per physiology lab. Blood steroids measurements for prednisolone and cortisol for patient on long term steroids. Vocal cord and upper airway dysfunction clinics including nasendoscopy with provocation, specialised physiotherapy for severe asthma including management of chronic hyperventilation syndromes and dysfunctional breathing, severe asthma psychology clinics that provides CPT amongst others. In terms of therapeutics; anti-IgE therapy, bronchial thermoplasty, steroids sparing agents “e.g. methotrexate”, continuous infusion of terbutaline etc. research team and we are taking part in various new drugs in developments including biologics “e.g. lebrikizumab and QGE”. This is a tertiary referral service so referrals are received from various parts of England and some cases from Wales.
- General respiratory clinics are run at the chest clinic with particular emphasis on intractable cough and diagnostics for asthma and this clinic receives referrals from all parts of Birmingham
- There are extensive services at Birmingham Chest clinic for diagnosis (TB, Interstitial Lung Disease, Occupational Lung Disease, allergy and with full physiology, NSBR. Oscillometry, FeNO and Oasys plots for occupational lung disease and plain film digital radiology. Full allergy services with skin prick and intradermal testing, inhaler technique training and assessment.
- Specialist nursing for Interstitial lung disease (nurse lead clinic) at BCC as well as BHH and Solihull, (GH patients come to BHH or BCC) which includes ambulatory oxygen assessments and end of life management and Bereavement support
- Specialist scientist with scientist-lead clinics for occupational airway diseases, looking at pre-employment failures, particularly for safety critical jobs such as fire fighting, and screening failures, particularly for occupational lung diseases.
- Dedicated MDTs for occupational and Interstitial lung diseases. There is contact and new-immigrant screening for TB. At BHH we have one of only 3 dedicated services for specific inhalation testing with occupational agents
- IV therapy for Bronchiectasis and COPD and CF patients at all 3 sites- small cohort of patients self-administering therapy at home, taught and supported by CNS team at BHH (outside of CF)
- Pulmonary Rehab - BHH and SOL. Community GHH Pulmonary Rehab
- BHH CNS team COPD – inpatient reviews, referrals to community teams, COPD Clinics, COPD discharge care bundle for Bronchiectasis – inpatient reviews, Bronchiectasis MDT clinic, home IV therapy support and teaching, Nebulised therapy trials clinic, NLC, telephone support service, TIVAD support,
- NMT clinic and telephone support service

Additional Services:

- Admission Avoidance -RADS Respiratory Ambulatory Day Service

Areas of best practice:

1. North Solihull supported discharge link -Community
2. Specific COPD clinic with open access for patients,
3. HUB clinic at BHH and Rads for admission avoidance.
4. CNS team provide crucial point of contact for GP, patients and interested others.

Areas for Improvement:

1. Currently no Birmingham community CNS support for the HOS-AR service
2. Assistive Discharge is at GHH but no early discharge at BHH. CNS team available to assist discharge at BHH/ SOL.
3. Hospital Respiratory CNS teams only available at BHH & GHH, no service at SH.

Contract details:

Service Area	2012/13 Activity
COPD Inpatients	1,634
Asthma Inpatients	1,267
Outpatients	6,200

Block for 12 months ending 31/03/14:

Point of Delivery	Activity	Cost
Elective day case	933	£709,123
Elective inpatient	126	£239,208
Non elective	1,026	£3,253,815
Other	818	£90,117
Outpatient follow up	10,075	£830,150
Outpatient New	4,914	£581,610
Outpatient TelFU	73	£1,587
UBOP	498	£47,556

SUMMARY OF CHAPTER 5**PRIMARY CARE SKILLS:**

There appears to be considerable variation in the level of training of clinicians treating asthma and COPD in primary care. In particular, a small proportion of spirometry is performed and interpreted by ARTP accredited clinicians (though the proportion is higher in BSC than the other CCGs).

Of particular note, is that where there is a higher proportion of ANPs performing reviews with patients, there appears to be a corresponding fall in the proportion of GPs conducting reviews.

There appears to be a number of practices in all CCGs that do not have basic equipment such as oxygen, nebulisers, etc; this may be an artefact regarding the way the question was asked and responded to.

PRIMARY CARE SERVICE PROVISION

BSC appears to provide services based on the NICE Quality Standards, and has mandatory training across all practices. 27% of practices within BXC provide a LES service for respiratory conditions. Both SWB and Solihull have no advanced provision at all for respiratory disease.

Whilst services may be tailored to the populations of each CCG, the differences in primary care service provision to such an extent may appear to undermine the principle of equity of access to quality health care.

COMMUNITY CARE SERVICE PROVISION

There are services available to the wider community from different providers; these may overlap in terms of

geographical coverage. Pulmonary rehabilitation is offered to all patients in all CCGs, though it is unclear from the data provided how accessible these services are to all parts of the population.

SECONDARY CARE SERVICE PROVISION

Respiratory services are provided from the 3 main hospital trusts in the local health economy; BCH also provides tertiary level care for children in the wider West Midlands.

6 RECOMMENDATIONS

The recommendations made below reflect the consensus view of the Sandwell, Birmingham & Solihull Respiratory Clinical Network, after reflecting upon this document. It was recognised that there was scope for large changes to be made in respiratory care within the local health economy; these were prioritised to either be a key focus for year 1, or as changes that could be introduced in years 2-3.

Year 1 Requirements

Primary Care:

1. Education and knowledge is fundamental in driving up the quality of primary care. CCGs should ensure that all primary care professionals with responsibility for respiratory health have a minimum level of training. CCGs should consider the development of a local respiratory educational programme for GPs and Nurses to address this.
2. The NICE Quality Standards for COPD & Asthma should be used as the basis for any local schemes for improving primary care diagnosis and management of COPD & Asthma
 - NICE Quality standards are the nationally agreed measures for good quality care, both clinically and in terms of service provision
 - They should be introduced throughout the CCGs (primary, secondary, community care providers) and used as the benchmark for assessing whether quality care is being delivered
3. Patients and carers should be empowered to care for themselves – this is what patients want. Simple measures such as increasing the number of people with written COPD/asthma management plans should be encouraged by CCGs immediately.
4. Diagnosis must be accurate (i.e. performed using evidence-based tests and by accredited professionals)
 - High quality spirometry is key – it must be performed by accredited professionals either in the same practice as the patient, or by a nearby provider
 - Accurate diagnosis in primary care will enable local registers to have more validity (see years 2-3)

Community Respiratory Services:

1. CCGs should consider addressing the current gaps in community respiratory provision to ensure services are equitably provided across all 4 CCGs. The main gaps in provision are within BCC CCG and BSC CCG.
2. CCGs should ensure that the outcomes commissioned for all community respiratory services are the same and are based on the evidence-base defined within this document. Service specifications should ensure integration across local community services and with secondary care providers
3. CCGs should ensure Pulmonary Rehabilitation (PR) is accessible to patients within the community setting. The review has identified large gaps in provision, particularly for patients within BCC CCG, despite the strong evidence base available for PR.

Secondary care:

1. CCGs should consider the use of CQUINs and Service Development Improvement Plans (SDIPs) to help secondary care providers focus their attention on key aspects of the NICE standards. Where used, these incentives should be aligned across all providers. Based on the findings of this review the CQUINs recommended for April 2014 include:
 - Implementation of discharge care bundles for all patients admitted with COPD / chronic respiratory disease

- Review of all admitted respiratory patients (where respiratory disease has played a role in the admission) prior to discharge by a respiratory specialist (including consultants, registrars, ANPs)
2. CCGs should consider the development of new strategies for managing the high rate of readmissions for children (aged 0-5) with asthma.

Public Health:

1. Further collaborative work should be undertaken with Local Authorities and the Health & Wellbeing Boards (a separate document is being created with more details on how the wider determinants affect respiratory health)
2. A system that leads to people of all ages diagnosed with a respiratory condition receiving assessment for the following should be explored:
 - Green Deal and other energy/warmth saving measures
 - Benefits and welfare maximisation to assist in mitigating fuel poverty
 - Advice with signposting for people regarding influenza and PCV vaccinations , in order to drive coverage rates in these risk populations higher
 - Advice with signposting to the NHS Healthcheck programme (prompting)
3. The DPH for Birmingham has agreed in principle (as Caldicott Guardian) to receive patient data to enable the Council to offer homes assessments for people diagnosed with respiratory conditions, provided GP practices provide access to patient details (with each patient's consent)
4. Clearly defined referral pathways need to be developed and implemented so that GPs and other clinical support staff can efficiently refer patients to services that can assist with the following:
 - Housing issues (for example, damp, cold homes)
 - Benefits and welfare advice and guidance (It is estimated that £80m goes unclaimed in benefits & welfare entitlement in Birmingham per year)
 - A proposed 'Lifestyle Hub' service from Birmingham City Council may be able to deliver automatic referral for e.g. people who smoke and have poor respiratory health, to cessation services – a service which could include opportunistic spirometry to assist with diagnosis

Years 2-3**Primary Care**

1. There is need for accurate registers of COPD and asthma, as current registers are not able to precisely show the number of people with these disease, making planning difficult (Accurate diagnosis in year 1 will enable these registers to have more validity)
2. Risk stratification & comorbidities:
 - Once identified as having COPD or asthma, a tool that can help stratify patients into risk categories (risk of admission and/or risk of death), to enable clinicians to focus particularly on those that may need closer management
 - COPD in particular is frequently linked to co-morbidities; joint case management with respiratory community teams may be necessary to ensure that higher-risk patients' health is optimised

3. Accurate medicines reconciliation on discharge:
 - This includes an understanding that branded medications may be appropriate for many patients, and that prescribing the inhaler that each patient prefers is likely to lead to better concordance
4. NICE Quality Standards & accurate diagnosis maintained after introduction in year 1
5. Good education of care providers so that practice is up-to-date with the best evidence
6. Identification of appropriate patients for oxygen therapy
7. Identification of appropriate patients for timely palliative care
8. Potential for telehealth utilisation as it is likely to be promoted by e.g. the Department of Health

Medicines management (for all providers)

1. A single formulary across the 4 CCGs will be in place, so that primary, secondary, and community providers are able to provide the same medications for all patients, regardless of administrative / patient-flow boundary clashes
2. Ensuring medicines are available for all levels of illness – where the patient is based – with appropriate step down when possible
3. Inhaler technique training for staff (delivered on site or through educational events) and patients (by staff that have received this training)
4. Use of pharmacies through advanced services e.g. Medicines Use Review to help deliver the above points

Patients

1. Patient education via clinicians should become established as the norm
2. Patient self-care where possible should be the default – but if patients feel they need professional advice regarding their respiratory condition, a single point of contact at a local level (e.g. the respiratory lead at the practice or assigned to a practice-level area from community services) should be available during working hours
3. Children can be targeted for opportunistic review through health and non-health methods, particularly
 - Schools (& school nurses)
 - Health visitors

Community

1. Equity of access to community teams established, providing:
 - Children's respiratory services

- Oxygen services (including patient identification alongside primary care)
- 2. Joint case management alongside primary care for high risk patients, with a view of co-morbidities
- 3. Seamless service across providers, reciprocal arrangements across post codes
- 4. Vertical integration with hospitals, community teams seeing patients in hospitals with e.g. regular MDT meetings

Secondary care

1. NICE Quality standards at the heart of services
2. CQUINs developed after negotiation during year 1, with targets around (e.g.):
 - Children – first diagnosis and follow up, under 5's
 - Patient education on medicines
 - Signposting help for housing stock (though this should be across primary and community service too)

Public Health / Local Authorities

1. Wider determinants tied into the health of patients and the population
 - Housing stock improvements
 - Services geared up to help with seasonal variation, particularly around cold snaps where many with respiratory disease can be affected
 - Air quality improvements
 - Integration of council services with health provision (e.g. schools, housing)
2. Smoking cessation services are commissioned by Local Authorities
 - Screening spirometry in smoking clinics may be an example of innovative practice

Palliative care

There must be a focus on:

1. Patient identification in a timely manner so that services can assist from an earlier stage of the disease process
2. Potential increases in capacity and skills in hospices to deliver appropriate end of life care to people with COPD
3. Integration with community teams so that the movement to palliative care is seamless from the patient's perspective

7 APPENDICES

Appendix 1 – The Working Group

Membership of the Working Group (**Bold**) established to conduct this review, along with significant contributors

Name	Role	Organisation
Arun Ahluwalia	Registrar in Public Health	Birmingham City Council (Public Health Team)
Jeanette Davis	Business Analyst	
Amanda Lambert	Senior Information Manager	
Hashum Mahmood	Evidence Base Manager	
Natalie Stewart	Information Analyst	
Kyle Stott	Lead – Policy & Regulation	
Christopher Zishiri	Consultant in Public Health Medicine	
Dr Will Taylor	Clinical Contracting/Respiratory Lead	Birmingham Cross-City CCG
Sapna Shannon	Head of Primary Care Development	
Karen Ennis	Assistant Head of Medicines Management	
Liz Wilson	Respiratory Clinical Lead/Nurse Practitioner	
Tracey Thorne	Local Commissioning Support Manager	
Ruby Dhillon	Engagement Officer	
Dr Raj Ramachandram	Quality Lead/Respiratory Lead	Birmingham South Central CCG
Carol Watson	Network Commissioning Manager	
Rachel Loveless	Commissioning Manager	Sandwell & West Birmingham CCG
Kally Judge	Project Support Officer	
Elaine Cook	Respiratory Clinical Lead	
Dr Joe Iyer	Long-term Conditions Clinical Lead	Solihull CCG
Bernie Faulkner	Service Redesign Manager	
Samina Arshad	Transformation Programme Manager	Central Midlands CSU
Alison Turner	Head of Knowledge Management	
Shiona Aldridge	Evidence Synthesis Manager	

Sian Sansum	Communications & Engagement Lead	
Dr Simon Gompertz	Respiratory Consultant	
Dr Brendan Cooper	Consultant Clinical Scientist	University Hospitals Birmingham
Jodie Hunt	Senior Chief Respiratory Physiologist	
Karen Jukes	Respiratory Service Lead	
Marion Cotter	Respiratory Nurse	Birmingham Community Healthcare Trust
Alison Hartley	Pulmonary Rehabilitation Lead	
Jo Watson	Service Manager	Birmingham Children's Hospital
Dr Maya Desai	Clinical Lead	
Dr Naresh Chauhan	Clinical Lead	South Doc Services
Nirmal Vora	Service Manager	
Dr Imtiaz Ahmed	Respiratory Consultant	
Mark Anderson	Clinical Director	Sandwell & West Birmingham Hospitals
Lorraine Rea	SWBH	
Tracey Crutchley	SWBH	
Kelly Redden Rowley	Clinical Lead & Service Manager	Sandwell Community Service
Dr Rifat Rashid	Respiratory Consultant	
Geraldine Burge	Respiratory Nurse Specialist	Heart of England Foundation Trust
Dr Adel Mansur	Respiratory Consultant	
Sandy Walmsley	Respiratory Nurse/Regional Respiratory Lead	

Appendix 2 – Stakeholder Event

List of stakeholders at Focus Group

Name	Role & Organisation
Alison Hartley	Senior Respiratory Physiotherapist
Anita Sullivan	Respiratory Team - UHB
Catherine Weir	Service Design Lead - St Mary's Hospice
Charlotte Barry	Children's Commissioner
Debbie Edmunds	Senior Respiratory Nurse
Dr Ali Akbar	Consultant Paediatrician - SWBHT
Dr Arun Ahluwalia	Trainee Registrar -B'ham Public Health
Dr Deepthi Jyothish	Consultant Paediatrician - BCH
Dr Joanna Whitehouse	Clinical Director - Heart of England
Dr Mukesh Sinha	Respiratory Clinical Lead - SWB CCG
Dr Raj Ramachandram	Clinical Lead - BSC CCG
Dr Rifat Rashid	Consultant and Intergration Lead - Heart of England
Dr Will Taylor	Clinical Lead - BCC CCG
Karen Enis	Medicines Management - BCC CCG
Karen Jukes	Respiratory Service Lead - BCHC
Marie Bradley	Clinical Director - John Taylor Hospice
Rachel Loveless	Commissioning Manager- SWB CCG
Ruby Dillon	Engagement Lead - BCC CCG
Sapna Shannon	Head of Primary Care - BCC CCG
Sarah Denniston	Paediatrician HEFT
Alan Hudson	Carer - BCC CCG
Amjid Ali	St Clements Surgery
Anne Yeomans	Breathe Easy Birmingham South (British Lung Foundation)
Bernard Kilpatrick	St Clements Surgery
Carol Sutton	Patient - SWB CCG
Doug Jewell	Asbestos West Midlands
Faye Collins	John Taylor Hospice
Ian Black	Breathe Easy - Solihull (British Lung Foundation)
Jane Terry	Associate Practice Teacher - BCHC
Janine Saunders	Patient - BCC CCG
Jeremy Bacon	British Lung Foundation
John O'Donnell	Carer - BCC CCG
Kate Roleston	Patient Sandwell Cares
Kathryn Meredith	Engagement Manager - SWB CCG
Lesley Barrett	Asthma Nurse - George Coller
Nathan Moore	Senior Manager – Adult Treatment Cluster, My Time Health
Patrick McCormick	Health Exchange
Rev Linda Isiorho	Asthma UK
Sheila Thomas	School Nursing Team at SWBH
Stan Lowe	Patient

Appendix 3 – Information poster



Be part of the conversation on local respiratory services

The Clinical Commissioning Groups of Birmingham, Sandwell and Solihull are jointly reviewing respiratory care and are keen to hear your views to improve services for asthma and chronic obstructive pulmonary disease (COPD)

How can you help?

If you suffer with asthma or chronic obstructive pulmonary disease (COPD) and are keen to get involved please share your stories with us via email, Twitter and Facebook.

- ➔ How could we improve asthma and COPD services?
- ➔ Share your experiences of using asthma and COPD services



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Follow us on twitter:
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For information about the respiratory review please call:



0121 2550828



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