NorthWest Public Health Observatory

liverpool JMU Centre for Public Health

Equality and the burden of vascular disease across the Cheshire Clinical Network.

Contents

Executive Summary

This report, commissioned by the Cheshire Clinical Network, provides information regarding the burden of vascular disease across the network in order to inform an Equality Impact Assessment. An Equality Impact Assessment is a necessary step for all public bodies considering a redesign, reconfiguration or development of services, to demonstrate that they have met the equality duty placed upon them by the Equality Act 2010.

A review of vascular services across Cheshire and Merseyside Vascular networks has recommended the reconfiguration of vascular services around a designated specialist centre. This report analyses hospital, mortality and primary care data across three Primary Care Trust footprints (Wirral, Western Cheshire and Warrington), to establish where the burden of disease lies in the context of identifying a suitable location for the specialist centre.

The report identifies that Wirral experiences the highest volume of disease across most measures, and that it also has the largest population. Warrington has the smallest population but for some conditions such as Coronary Heart Disease, the proportion of deaths and age standardised rate of hospital episodes is higher for Warrington than for Wirral, suggesting that Warrington may experience a relative disadvantage in health status and outcomes[a]. Western Cheshire generally lies between the two other areas across most measures. The report also identifies that a geospatial analysis could assist the determination of the specialist centre but argues that this component is less significant than in cases where travel time or distance has a greater influence of service take-up or health outcomes (such as emergency medicine or General Practice).

The report concludes that overall, most protected characteristics under equality legislation will not be specifically disadvantaged by the determination of the specialist centre location. However, the potential disadvantage Warrington currently experiences in health-related outcomes may have particular relevance to the protected characteristic of age. The report recommends that commissioners should decide whether this apparent inequality in health status and outcomes is sufficiently serious to justify locating the centre away from the area with the highest volume of disease and service use. Whatever, the decision commissioners are advised to introduce measures that will mitigate any accruing disadvantage.

[a] Geospatial analysis combines statistical methods with geographic datasets

Introduction

The Equality Act 2010 was introduced to bring together the many different pieces of legislation concerning the elimination of discrimination, promoting fairness and the advancement of opportunity for all. The Act identifies the following nine protected characteristics:

- age
- disability
- gender
- gender reassignment
- pregnancy and maternity
- race
- religion or belief
- marriage and civil partnership
- sexual orientation

The Equality Duty

The equality duty, under the Act, came into force in April 2011. It states that for age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation characteristics, those subject to the *general* equality duty must have due regard to the need to:

- Eliminate unlawful discrimination, harassment and victimisation
- Advance equality of opportunity between different groups
- Foster good relations between different groups

These are sometimes referred to as the three arms or aims of the *general* equality duty. The duty to have due regard to the need to eliminate discrimination also covers marriage and civil partnership. The Equality Act additionally provides powers for the imposition of *specific* duties through regulations. The *specific* equality duties are legal requirements designed to help those public bodies covered by the specific duties meet the general duty.

Following a government consultation, the Equality Act 2010 (Specific Duties) Regulations 2011 came into force in September 2011. These regulations promote the better performance of the equality duty by requiring the publication of:

- equality objectives, at least every four years
- information to demonstrate their compliance with the equality duty, at least annually

Cheshire and Merseyside Vascular Services Review

A review of vascular services in Cheshire and Merseyside, presented in October 2011, recommended that to provide cost effective and quality services across the area, two networks should be commissioned with one arterial centre in each network. Contingent with this recommendation, a Centre (Royal Liverpool and Broadgreen University Hospitals NHS Trust) has been designated to serve a network North of the River Mersey (the North Network). Both this and the location of a South Network Centre is subject to consultation.

Equality Impact Assessment

The Cheshire Clinical Network has commissioned this report to provide information which can form the basis of a formal Equality Impact Assessment (EqIA). EqIAs provide a framework by which public sector bodies can meet their legal obligations to show due consideration and, where necessary, elimination or mitigation of potential inequality in the provision of services to the public and their staff.

This report considers the general burden of vascular disease across Cheshire and Merseyside, any empirical evidence of the extent to which vascular disease may disproportionately affect people or communities with protected characteristics, and considers these data in the context of the legal requirements to comply with the three aims of the equality duty (i.e. eliminate discrimination, advance equality of opportunity and foster good relations).

Vascular Services and the Burden of Disease

Vascular services are provided for the planned treatment of conditions relating to the circulatory system, or affecting veins and arteries. These conditions are commonly caused by a partial or total blockage of the blood vessel or else by aneurysms[b]. Vascular services also treat blood vessel abnormalities. Health professionals who specialise in vascular disease are required in the support of other medical interventions such as dialysis, chemotherapy and trauma cases involving blood supply within the body.

It is important to acknowledge a distinction between vascular disease and vascular services. Vascular services may not have primacy over the treatment of vascular disease in all cases

[b] Aneurysms are balloon-like bulges in weakened parts of the wall of a blood vessel which can rupture, causing internal bleeding. Hereditary, disease and lifestyle factors can cause the walls of blood vessels to weaken.

and other medical services often provide the treatment of conditions involving blood vessels. These may include cardiac services, emergency medicine and neurology but the exact determination of services and their responsibilities can vary between areas. In other words vascular disease can be defined by a number of conditions but it may be that treatment for those conditions is not delivered through vascular services. For example, Coronary Heart Disease (CHD) which is a narrowing or blockage of the coronary arteries is clearly a type of vascular disease but treatment and interventions are often conducted through cardiac services. However, it is important to consider conditions like CHD in an assessment of the burden of vascular disease because a patient who is at high risk of a condition related to the blood vessels may be just as likely to present with CHD as a stroke or aneurysm. Although it is believed there is a genetic component to how conditions actually manifest[1], this area is not fully understood and therefore it is appropriate to consider all vascular diseases in relation to provision of vascular services.

The Department of Health launched a vascular programme briefing pack in 2009[2] which described that vascular disease includes CHD, Stroke, Diabetes and Kidney Disease. This programme also draws on the evidence of identified risk factors for these conditions. These risk factors include:

- age - risk increases with age
- gender – men are more likely to develop cardiovascular disease (CVD) at an earlier age than women
- smoking - smokers have a higher risk than non-smokers
- obesity – being overweight or physically inactive increases risk
- high blood pressure (hypertension) – high blood pressure increase the risk
- diabetes – those with diabetes (type 2) are at greater risk
- ethnicity – people from certain ethnic backgrounds are more likely to experience higher risks for certain conditions[3] (Figure 1)

Figure 1: British Heart Foundation Ethnicity Statistics [3, 4]

- **coronary heart disease** rates are the highest in **South Asian** communities
- **stroke** rates are the highest in people with an **African Caribbean** background
- you have a higher risk of developing **high blood pressure** if you are from an **African Caribbean** background than all the ethnic groups in the UK
- the prevalence of **type-2 diabetes** for people of **African Caribbean** and **South Asian** ethnicity is **much higher** than in the rest of the population

In the context of the Vascular Services review, it is important to understand the burden of disease as it relates to particular groups or communities and as it relates to potential ill-health. In other words, it is important to consider not just those who already have a diagnosed condition but also those who are likely to have, or may develop, a condition which is predicted by their community characteristics, lifestyle or behaviour. An analysis of the burden of disease should therefore identify both the prevalence of specified conditions and also the prevalence of risk factors associated with these conditions.

Burden of Disease Analysis

In order to understand the burden of disease, a suite of indicators is required which can provide a picture of disease across a given geography. The indicators used in this report are drawn from mortality, Hospital Episode Statistics and primary care or Quality and Outcomes Framework (QOF) data. These data can be used as a proxy for both disease prevalence and also inform understanding about service usage. Figures for the region, which are based on the North West Strategic Health Authority (NW SHA) footprint, are included where it is helpful to provide some context.

Data considerations

Epidemiological data analysis is used to understand disease and population health patterns and this makes use of rates or percentages thus allowing a comparison to be made between different areas that may have different population sizes and characteristics. However, analysis of patient numbers is also important, particularly when considering how to provide clinical services and care.

The example below (Example 1) shows how two different arguments can be made in respect of the problems faced by two fictional areas (areas A and B) by using either rates or numbers, with both options being equally valid. In considering equality it is important that both these analyses are made available so that where there is a dilemma (such as presented in the example), the right level and amount of mitigation can be applied to the decision where one or other of the populations might be disadvantaged. For this reason and where possible, analysis figures in this report include the number of incidents (e.g. deaths, hospital episodes), a Crude Rate (CR)[c] and a Directly Standardised Rate (DSR)[d]

[c] This is the number of people in an area with a characteristic as a proportion of the total number of people in that area.

Example 1: Rate versus Numbers Debate

Population of Area A is 1000 people and 90% of that population (or 900 people) have a particular health condition. In Area B with a population of 100,000 people, 20% (or 20,000 people) have the same condition.

In equality terms, commissioners have to balance the likelihood that someone will require treatment (*people are 4.5 times more likely to require treatment in Area A than Area B*) with the number of people they have to provide treatment for *(Area B has 22 times more people requiring treatment than Area A).*

This report also includes QOF data to help understand local prevalence, however, the data should be viewed with caution as QOF is a voluntary annual award and incentive programme which relies on General Practice compliance[5].

Not all data is available on the same geography. For ease of data collection and interpretation, this report presents data based on Primary Care Trust (PCT) and Local Authority geography. Results at this geography may need to be viewed with caution since these boundaries may not be conterminous with those that define a particular local community or group with shared characteristics.

Sociodemographic Characteristics

Local population figures show that the Wirral Primary Care Trust (PCT) area has the highest population (n=308,495; Table 1), followed by Western Cheshire PCT (n= 233,324) and Warrington PCT (n=197,763). Just over 40% of the population in the South Network are served by Wirral PCT. Other demographics, such as gender and the number of people who describe themselves as Black or other Minority Ethnic group, broadly follow this trend (Table 2) with Wirral having the largest number. Population figures for the North Network area are included here to provide a reference point.

[d] A DSR is a way of comparing two or more areas by showing what the rate would be if they all had the same population structure and is expressed as *n* per 100,000 of the population

Table 1: Cheshire and Merseyside Vascular Network Demography– Total Population

Cluster	PCT	Total Population	Male	Female	All Ethnic Groups[e]	White	BME	IMD 2010 Rank
North	Halton and St Helens PCT	295,830	143,925	151,905	295,800	287,900	7,900	34
North	Knowsley PCT	149,361	71,059	78,302	149,400	144,200	5,200	6
North	Liverpool PCT	442,295	217,351	224,944	442,300	402,600	39,700	2
North	Sefton PCT	273,303	130,265	143,038	273,300	263,700	9,700	73
North	**Total**	**1,160,789**	**562,600**	**598,189**	**1,160,800**	**1,098,400**	**62,500**	
South	Warrington PCT	197,763	97,913	99,850	197,800	189,700	8,100	100
South	Western Cheshire PCT	233,324	113,849	119,475	233,300	224,700	8,800	115
South	Wirral PCT	308,495	147,154	161,341	308,500	298,000	10,600	50
South	**Total**	**739,582**	**358,916**	**380,666**	**739,600**	**712,400**	**27,500**	
Total	**Grand Total**	**1,900,371**	**921,516**	**978,855**	**1,900,400**	**1,810,800**	**90,000**	

Source: ONS 2009

Table 2: Cheshire and Merseyside Vascular Network Demography– Population relative to the total population within Northern and Southern Clusters

Cluster	PCT	Total Population	Male	Female	All Ethnic Groups	White	BME	IMD 2010 Quintile
North	Halton and St Helens PCT	25.5	12.4	13.1	25.5	24.8	0.7	4
North	Knowsley PCT	12.9	6.1	6.7	12.9	12.4	0.4	5
North	Liverpool PCT	38.1	18.7	19.4	38.1	34.7	3.4	5
North	Sefton PCT	23.5	11.2	12.3	23.5	22.7	0.8	3
North	Total	100.0	48.5	51.5	100.0	94.6	5.4	4
South	Warrington PCT	26.7	13.2	13.5	26.7	25.6	1.1	2
South	Western Cheshire PCT	31.5	15.4	16.2	31.5	30.4	1.2	2
South	Wirral PCT	41.7	19.9	21.8	41.7	40.3	1.4	4
South	Total	100.0	48.5	51.5	100.0	96.3	3.7	3
Total	Grand Total	100.0	48.5	51.5	100.0	95.3	4.7	

Source: ONS 2009

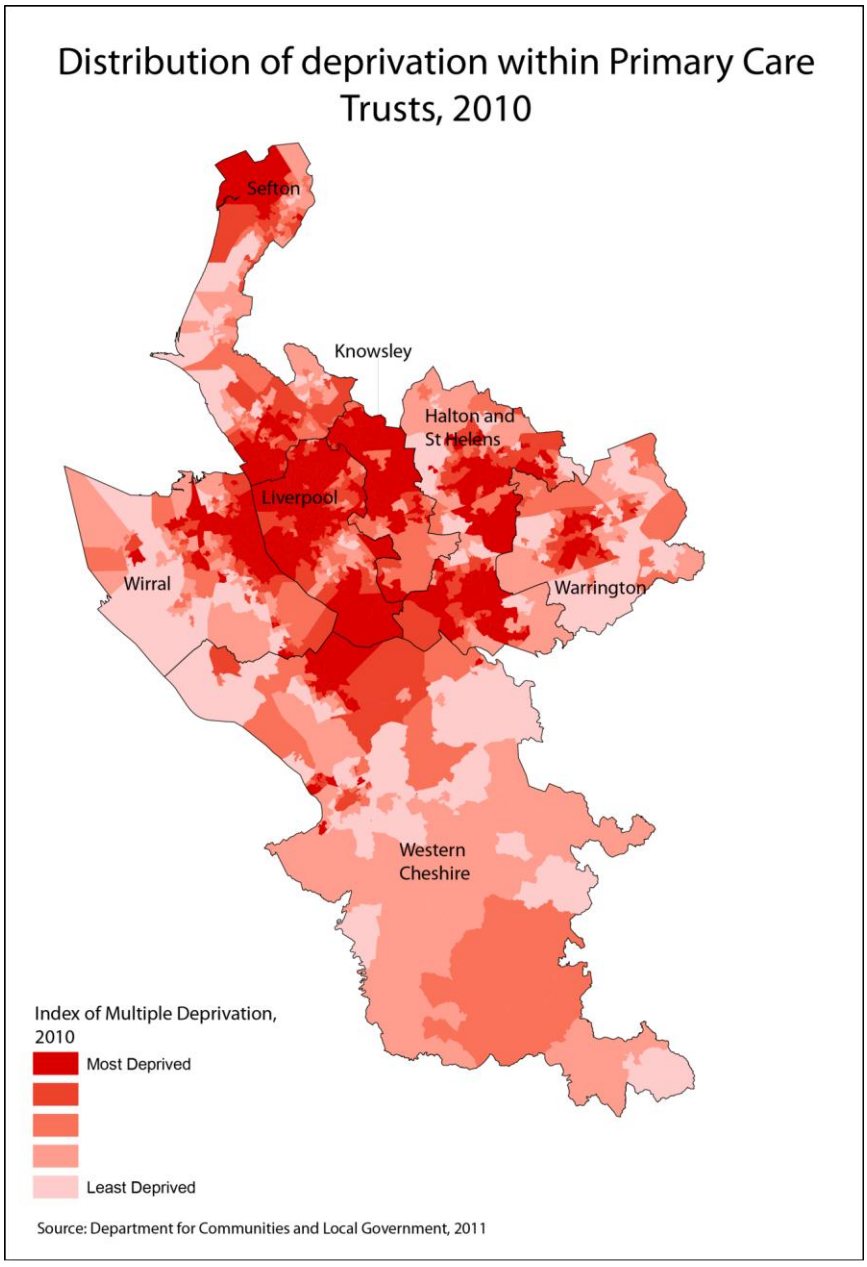
[e] Ethnic groups are based on estimates from ONS and therefore do not match total population exactly.

Deprivation

Deprivation is closely linked to health inequalities with people living in the most deprived areas having a greater risk of a variety of health problems including a higher risk of Cardiovascular Disease [6, 7]. Wirral PCT has the highest level of deprivation in the Network and is in the 4th Quintile of deprivation nationally according to the Index of Multiple Deprivation (IMD) 2010. Western Cheshire and Warrington are both identified to be in the 2nd Quintile[f]. However, analysing IMD ranking at a higher geographic level can be a blunt tool. While Warrington and Western Cheshire share the same IMD quintile rank, more detailed analysis shows that there are communities in both of these areas, who experience very high levels of deprivation but this is masked at a PCT level by a large number of very affluent areas. Similarly, Wirral has some of the most affluent areas in the Network (Figure 2).

[f] IMD Quintiles – 1 is the most affluent through to 5 which is the most deprived.

Figure 2: Map of the Distribution of Deprivation based on IMD (2010)



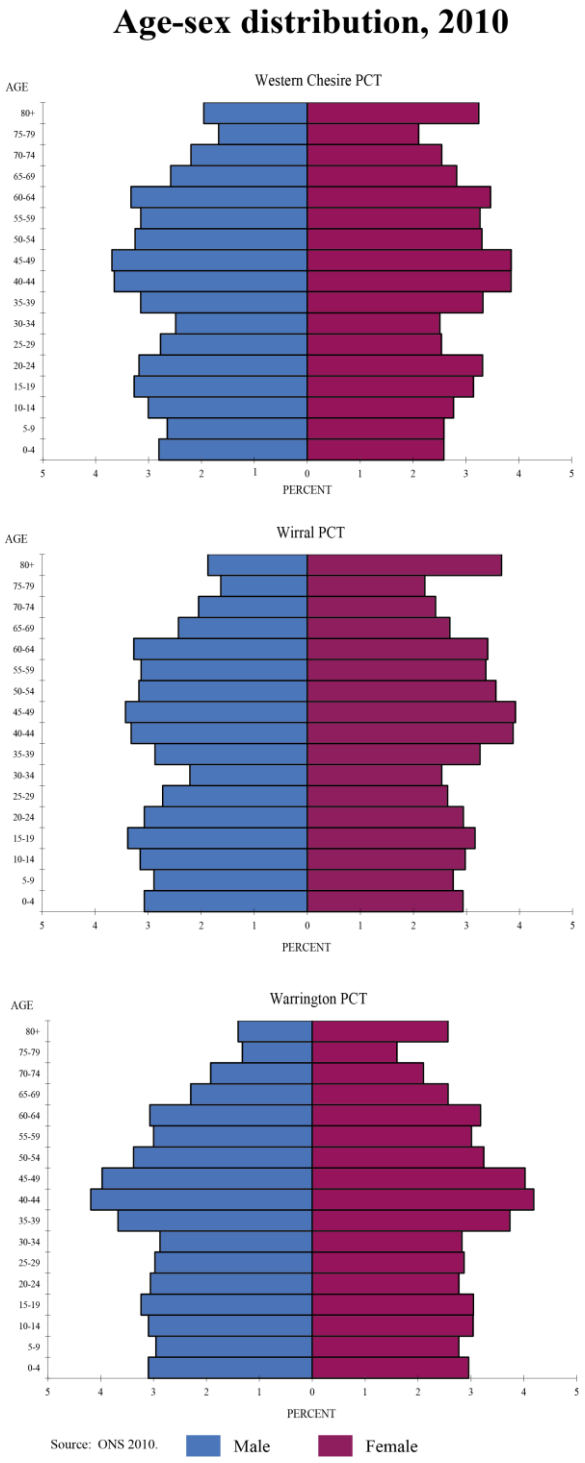
The distribution map (Figure 2) shows that there are communities in each of the PCT areas that are particularly disadvantaged. These tend to be in urban areas and are also located near to the three main hospital sites. Given that the selection of an arterial centre is tied to current hospital locations, it is clear that some mitigation will be needed to ensure that the deprived communities in those areas furthest away from the Centre can still access the service. A geospatial analysis is discussed later in this report.

Risk Factors

Age and Gender Profiles

The age-gender profiles (Figure 3) show that there are broad similarities between the profiles of Western Cheshire PCT and Wirral PCT, whereas Warrington PCT has a considerably larger population of 30-55 year olds and fewer people over 70 years.

Figure 3: Age-Sex distribution for three PCTs (ONS, 2010)



Lifestyle Profiles

Diet, exercise and smoking have all been identified as risk factors for vascular disease. Table 3 uses data from the national Health Profiles[8] to show where the burden of this general ill-health lies. Western Cheshire is identified as being the 'healthiest' area in respect of all these indicators. Wirral performs worst in respect of diet and exercise indicators and Warrington has the highest percentage of adults who smoke.

*Table 3: Selected Health Profile Indicators (Health Profiles, 2011)**

	Adults Smoking[g]	Physically Active[h]	Obese[i]	Healthy eating[j]
Warrington	22.53	11.15	22.90	27.90
Cheshire West and Chester**	20.46	13.27	22.70	28.40
Wirral	21.55	10.21	23.10	26.70
NW Region	23.42	11.25	23.40	26.20

*Each indicator in the 2011 profiles has a defined data period.

**The Health Profiles are produced on a Local Authority geography which it not always fully co-terminous with PCT geography.

[g] This is a measure of the percentage of adults who smoke 2009/10
[h] This is the percentage of adults participating in moderate intensity sport or activities on 20 days in the last 4weeks
[i] Modelled estimates of the percentage of adults who are obese.
[j] Modelled estimates of the percentage of adults who eat healthily.

Vascular Disease

Mortality

Mortality figures show the number of people who die from a given condition. The number of people who die from very specific conditions is usually small and can be unduly influenced by certification and coding practices, so data is presented here which covers only the most common causes of vascular disease-related death. More people die of vascular disease in the Wirral (n=912; Table 4a) than either Western Cheshire (n=550) or Warrington (n=439). However, this pattern is not repeated across all three main conditions. Western Cheshire has the highest number of deaths due to hypertension (n=30; Table 4a).

Table 4a: Mortality – CHD, stroke, hypertension – total deaths

Cluster	Primary Care Trust	All Deaths	CHD	Stroke	Hypertension	Total vascular mortality indicators
South	Warrington	1,792	283	148	8	439
South	Western Cheshire	2,272	306	214	30	550
South	Wirral	3,526	506	389	17	912
South	**Grand Total**	7,590	1,095	751	55	1,901

Source: NHS IC indicator portal 2012

Further analysis (Table 4b) shows that while Wirral has by far the largest number of deaths due to vascular disease it does not necessarily follow that Wirral residents are very much more likely to die of vascular diseases. Indeed, detailed analysis of the conditions shows that CHD is more likely to be the cause of death for residents of Warrington than either Wirral or Western Cheshire residents and Hypertension is more likely to be a cause of death in Western Cheshire than the other two areas.

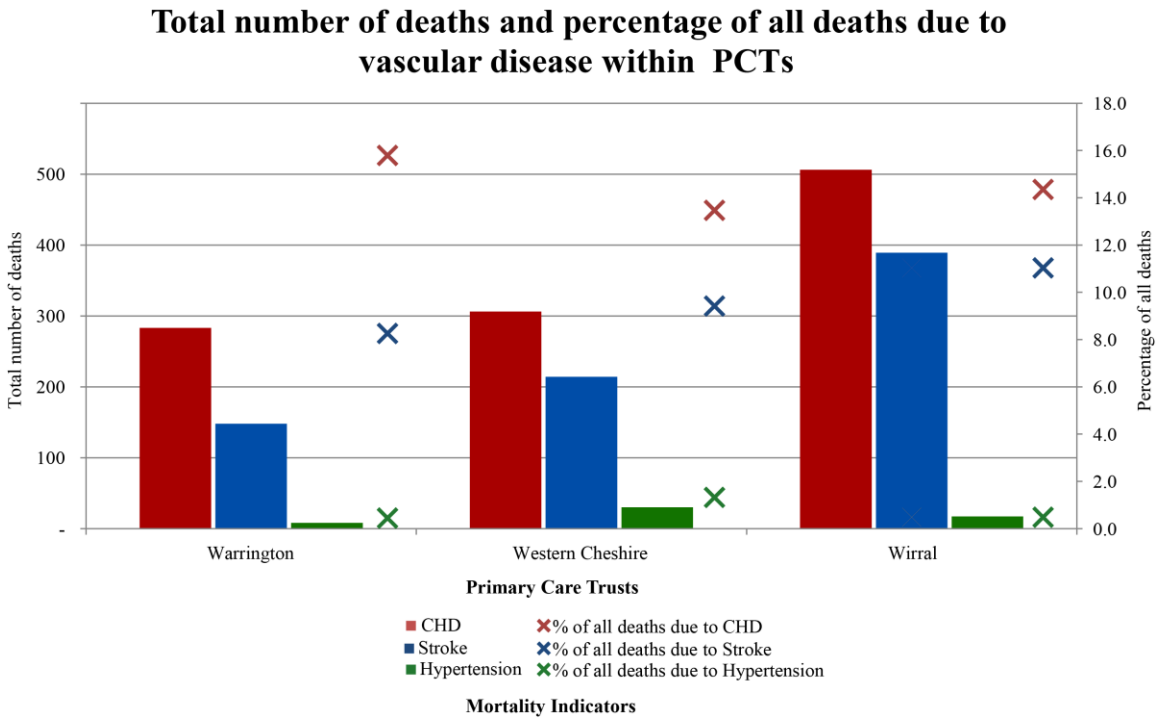
Table 4b: Mortality – CHD, stroke, hypertension – Vascular Mortality indicators as a percentage of all deaths within PCT

Cluster	Primary Care Trust	CHD	Stroke	Hypertension	Total vascular mortality indicators
South	Warrington	15.8	8.3	0.4	24.5
South	Western Cheshire	13.5	9.4	1.3	24.2
South	Wirral	14.4	11.0	0.5	25.9
South	**Grand Total**	14.4	9.9	0.7	25.1

Source: NHS IC indicator portal 2012

Figure 4a below shows how certain conditions make different contributions to the overall number of deaths in each area.

Figure 4a: Number and percentage of vascular disease deaths by PCT 2010



Source: NHS IC 2012

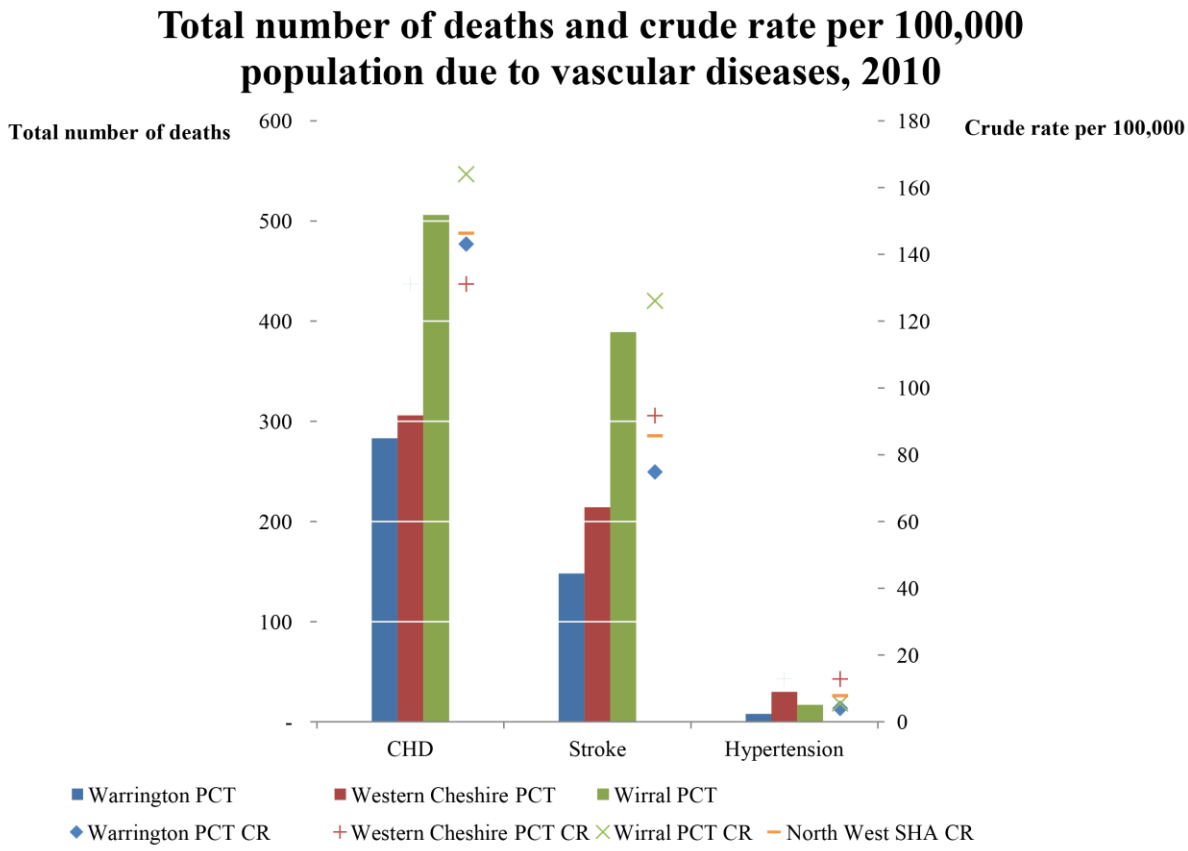
Analysis of the Crude Death Rate in each area allows further comparison as it takes into account the different population sizes (Table 4c; Figure 4b).

Table 4c: Mortality crude rates, per 100,000 population, for selected vascular mortality indicators: CHD, stroke, hypertension

Geographic region	Population	All Deaths	CHD CR	Stroke CR	Hypertension CR	Total vascular mortality indicators
Warrington PCT	197,763	906	143	75	4	222
Western Cheshire PCT	233,324	974	131	92	13	236
Wirral PCT	308,495	1,143	164	126	6	296
North West SHA	6,935,736	971	146	86	8	240

Source: NHS IC indicator portal 2012

Figure 4b: Total number of deaths and crude rate per 100,000 population due to vascular diseases 2010



Source: NHS IC Indicator Portal, 2012

These analyses do not take into account differences in the age profile. As identified earlier, Warrington has a smaller proportion of residents over the age of 60 than either Western Cheshire or Wirral and has a particularly large proportion of 35-55 year olds. It may also be that certain age groups are more likely to die from particular conditions. To assist our understanding of this it is necessary to use DSR in order to control for the fact that these areas do not have the same population age profiles with Warrington having a smaller proportion of older people. It is also important to consider not just mortality data but also morbidity[k] data to see if a similar pattern emerges.

[k] Morbidity is the incidence of a particular disease in a population and not just the number who die from the disease. It can be understood through hospital and GP attendance.

Hospital Episode Statistics[l]

Hospital Episode Statistics (HES) data for the North West were requested and extracted from the North West Public Health Observatory (NWPHO)[m]. Hospital admission data were extracted for the last five available years (2006-2010) and were collected individually for each of the following primary diagnosis codes (Table 5):

Table 5: List of HES codes used in analysis

Condition	ICD 10 Codes
Coronary heart disease (CHD)	I20-I25
Stroke	I61-I64
Hypertension	I10-I15
Abdominal Aortic Aneurysms (AAA)	I71.3 -I71.4
Carotid Stenosis	I65.2
Varicose Veins (Lower extremities)	I83-I86
Diabetes	E10-E14
Renal Failure	N17-N19

These codes were selected based on a similar draft analysis conducted in 2010 by Liverpool PCT[9]. Population data was downloaded from National Statistics online for each PCT for the period 2006-2010. As a general approach, total numbers are presented alongside crude rates and directly age-standardised rates per 100,000 individuals for each PCT. Directly age-standardised rates were calculated for the five year period for each of the condition categories. The data is standardised against the European region population (Table 6)

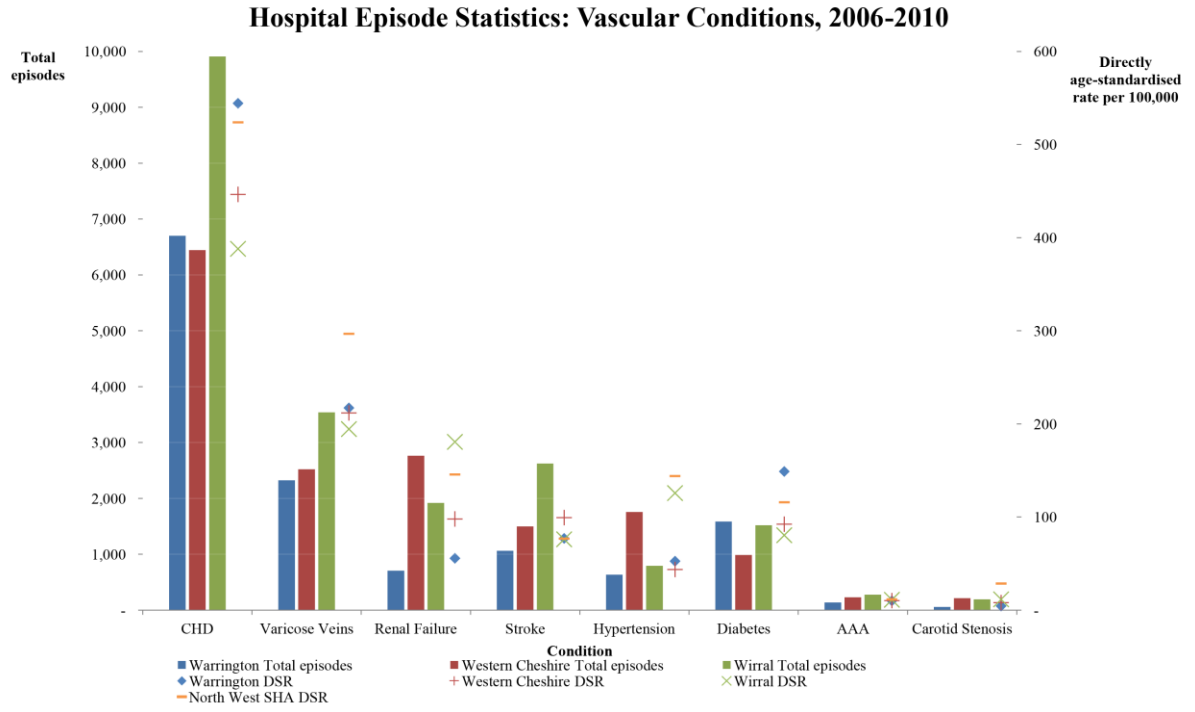
Figure 5 illustrates the total hospital episode statistics for each of the vascular conditions within each PCT. Overall, Coronary Heart Disease (CHD) was the condition that accounted for the largest number of episodes (23,053) followed by varicose veins (8,385), renal failure (5,384), stroke (5,185), hypertension (3,183), diabetes (4,089) abdominal aortic aneurism (AAA) (644) and carotid stenosis (462). Wirral contained the highest total number of episodes (20,773) followed by Western Cheshire (16,407) and Warrington (13,205). Wirral accounts for the largest number of episodes for CHD (9,909), varicose veins (3,541), stroke (2,624), AAA (277) and carotid stenosis (193). Western Cheshire accounts for the largest number of episodes for renal failure (2,761) and hypertension (1,757). Warrington accounts for the largest number of episodes for diabetes (1,586).

However, in contrast to the crude death rates, Warrington has recorded the highest directly age-standardised hospital episode rate (DSR) for CHD (544.2), varicose veins (217.2) and diabetes (148.9). Wirral has the highest DSR for renal failure (180.7), hypertension (125.7), AAA (11.1) and Carotid Stenosis (11.61). Western Cheshire records the highest DSR for

[l] Hospital data used here is the number of first finished consultant episodes (FFCE) which is considered an admission episode

stroke (99.4). In comparison to the North West SHA DSR, Warrington recorded higher rates of CHD and diabetes, Wirral recorded higher rates of renal failure and Western Cheshire recorded higher rates of stroke.

Figure 5: Total Hospital Episodes and DSR for selected conditions by PCT 2006-2010



Source: NWPHO from Hospital Episode Statistics

Table 6: Directly age-standardised rate of Hospital Episodes for vascular conditions by PCT 2006-2010

Geography	CHD	Varicose Veins	Renal Failure	Stroke	Hyper-tension	Diabetes	AAA	Carotid Stenosis
Warrington PCT	544.2	217.2	55.7	77.1	52.6	148.9	10.1	4.4
Western Cheshire PCT	446.5	211.8	97.9	99.4	43.7	92.4	10.2	8.1
Wirral PCT	388.0	194.4	180.7	76.1	125.7	80.4	11.1	11.6
North West SHA	523.9	296.7	145.6	76.8	144.0	115.8	11.6	28.6

Source: NWPHO from Hospital Episode Statistics

Quality and Outcomes Framework (QOF) Data

QOF data records the prevalence of disease as captured through primary care and in particular General Practice. Figures show that Wirral has the highest number of people on the QOF register for all the specified diseases (Table 7; Figure 6). However, as has been observed across the other data, when the analysis takes into account the population size of each area, the areas are more evenly matched.

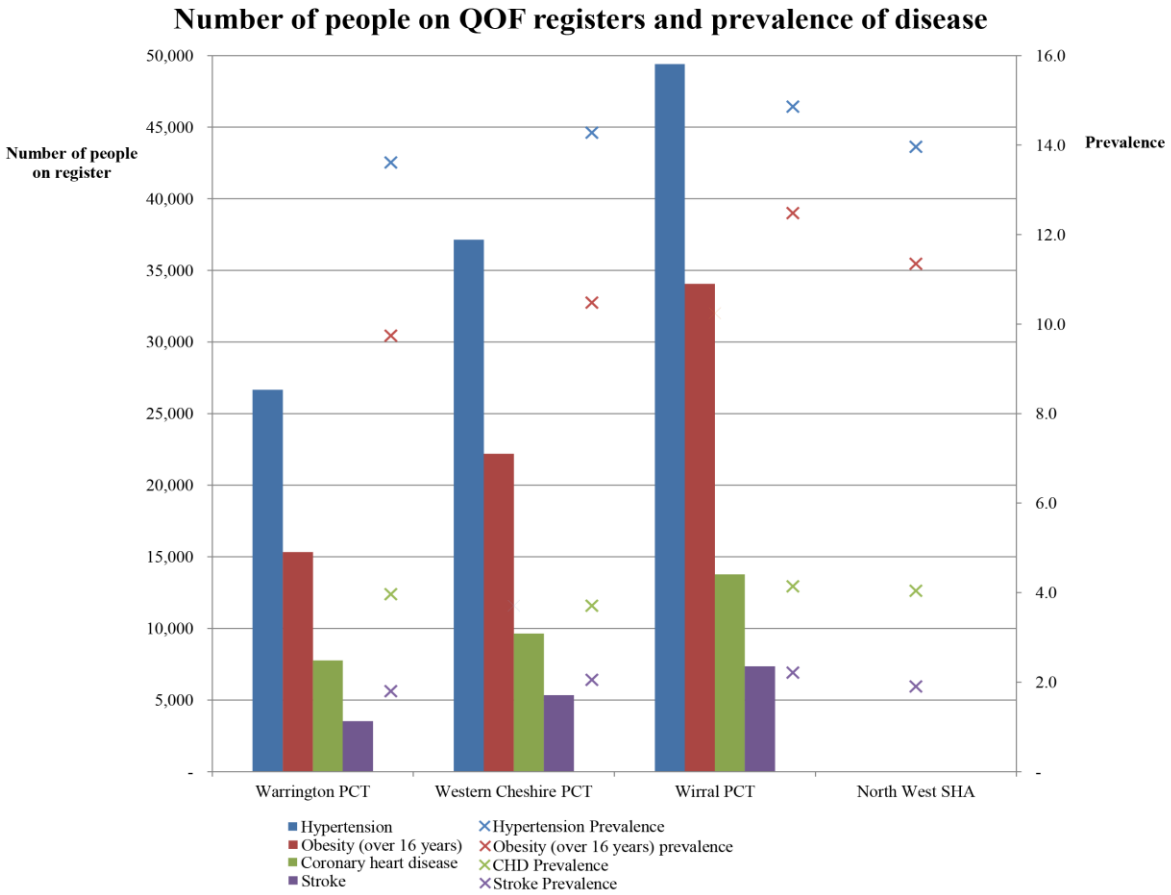
Table 7: Vascular Disease Prevalence: CHD, Stroke, Hypertension, Obesity, Diabetes – Total numbers and Prevalence

Geography		Coronary Heart Disease		Hypertension		Stroke	
	List Size	Register	Prevalence (%)	Register	Prevalence (%)	Register	Prevalence (%)
Warrington	195,885	7,768	4.0	26,663	13.6	3,523	1.8
Western Cheshire	260,193	9,647	3.7	37,149	14.3	5,339	2.1
Wirral	332,529	13,769	4.1	49,411	14.9	7,359	2.2
NW SHA	7,381,814	298,317	4.0	1,030,582	14.0	140,577	1.9

Primary Care Trust		Obesity (over 16 years)	
	List Size	Register	Prevalence (%)
Warrington	159,463	15,338	9.6
Western Cheshire	216,029	22,189	10.3
Wirral	272,867	34,063	12.5
Total	6,022,754	690,599	11.5

Source: QMS database – 2-1-/11 data as at end of July 2011

Figure 6: Number of people on QOF register and prevalence (%) by PCT



Source: QMS database – 2-1-/11 data as at end of July 2011

Vascular Disease and Protected Characteristics

Ethnicity

Table 8 displays the total vascular hospital episodes and the crude rates (CR) for White, and Black and other Minority Ethnic (BME) groups. The crude rates are based upon the 2009 population estimates from the Office of National Statistics (ONS). Due to unavailability of ethnicity population data during the five year period 2006/07 to 2009/10, it is assumed that the total population and ethnic composition has remained constant over time. Therefore, crude rates are based upon a five year total of the 2009 population and ethnic composition. 2,037 records were excluded because ethnicity was either unknown or was not stated. However, these missing values are evenly distributed across all the areas and account for only 2-5% of the total in each area.

In total, Wirral has the highest number of hospital episodes recorded as White ethnicity (19,168) and Western Cheshire contains the largest amount of BME hospital episodes (669). Conversely, Western Cheshire contains the highest crude rate (1,352) for White ethnicity and for BME (1,520). The White ethnicity crude rate (CR) is lower in all three PCTs than the North West average (North West SHA) whereas Western Cheshire records a higher BME CR than the North West average (North West SHA).

Table 8: Hospital episodes and crude rates per 100,000 population, for vascular conditions by ethnicity 2006/07-2009/10 pooled.

Geography	White ethnicity Total Hospital Episodes	BME Total Hospital Episodes	White ethnicity CR	BME CR
Warrington PCT	12,595	289	1,328	714
Western Cheshire PCT	15,189	669	1,352	1,520
Wirral PCT	19,168	441	1,286	832
North West SHA	462,440	33,079	1,463	1,151

Source: HES and ONS 2006-2010

It has already been recorded on Page 6 that there is a recognised body of evidence that ethnicity and cultural factors affect predictive risk of vascular disease, with some BME communities inheriting higher risks. This basic analysis suggests that the number and rate of episodes from BME communities is greatest in Western Cheshire[n]. While the numbers are relatively small, in order that these groups are not discriminated against it is important that

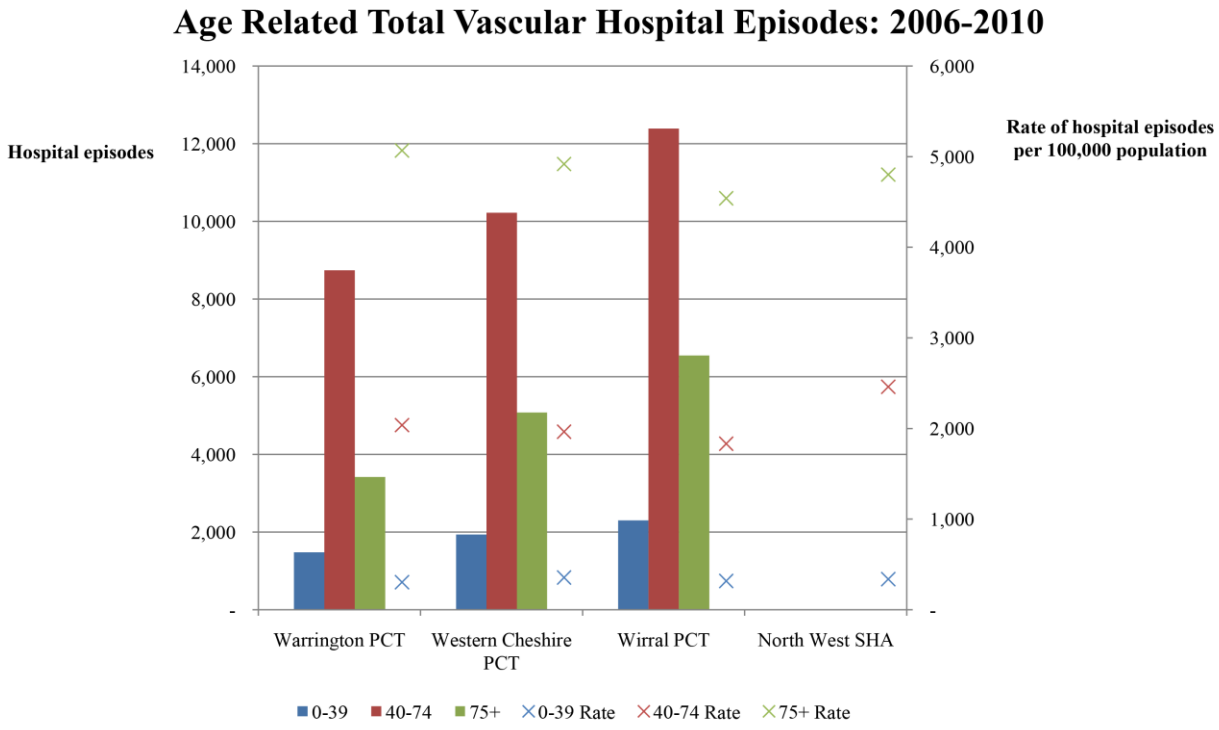
[n] BME as an umbrella classification covers many different ethnicities and therefor it is important to recognise that this is not a homogenous group.

commissioners recognise the difference in the ethnicity profile of each area and where necessary introduce appropriate mitigating steps.

Age

Figure 7 illustrates the total vascular conditions hospital episodes for three different age groups: 0-39 years, 40-74 years and 75+ years. The age group 40-74 years contains the largest number of recorded episodes (30,693), followed by the age group 75+ years (14,271) and then 0-39 years (5,384). Wirral contains the largest number of episodes for all age groups: 40-74 years (12,168), 75+ years (6,412) and 0-39 years (2,186). Warrington has recorded the highest hospital episode rate for the age groups 75+ Years (376) and 40-74 years (92) while Western Cheshire has the highest hospital episode rate for the age group 0-39 years (48). The northwest SHA recorded higher rates than the three PCTs for the age categories 0-39 and 40-74 whereas Warrington and Western Cheshire recorded higher rates than the regional average in the age category 75+.

Figure 7: Total Hospital Episodes and Hospital Episode Rate by PCT for 3 different age groups



Source: NWPHO from Hospital Episode Statistics

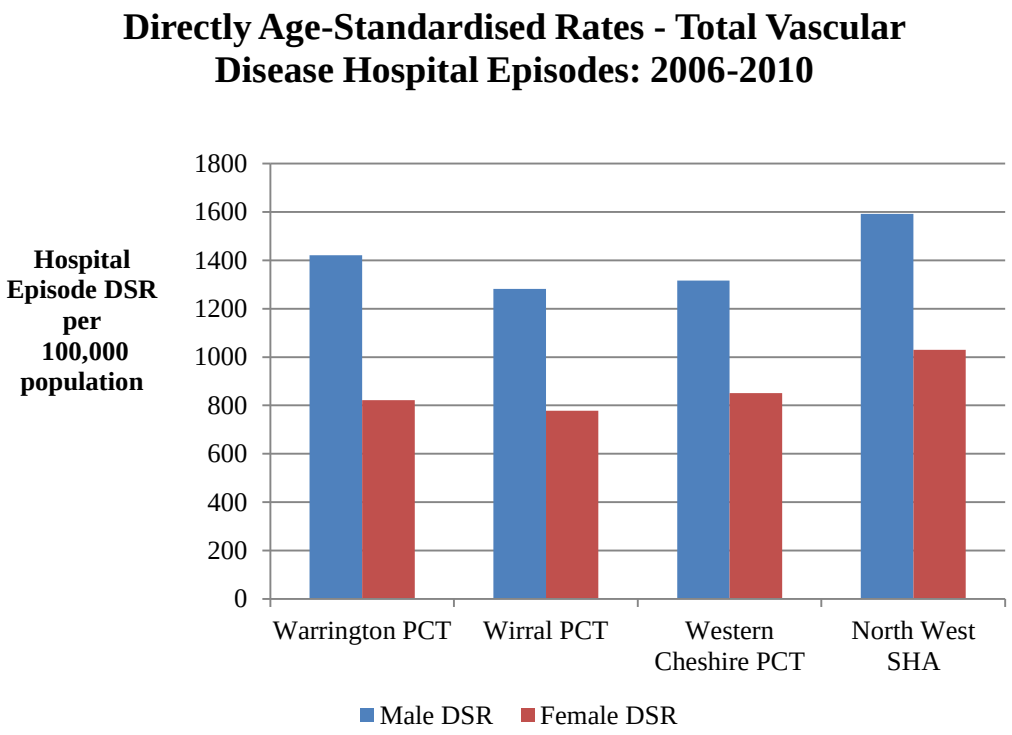
Of particular interest in this analysis is the difference in experience for the 75+ year age group. There were nearly twice as many hospital episodes in the Wirral (n=6,412) as Warrington (n=3,290). However, Warrington residents are 10% more likely to be admitted to hospital. Similarly, in the 40-74 years age group, Wirral has 43% more hospital episodes than Warrington but Warrington residents of this age group are 10% more likely to have a hospital episode than Wirral.

It is not possible to draw any absolute conclusions from this data as many factors could influence a hospital episode including for example, the accessibility of primary care and community services, the severity of the condition and the timeliness of first presentation by patients, general patient perceptions of the health care system[10]. Commissioners will want to give these figures further detailed consideration particularly as transportation and mobility access is a specific challenge for the 75+ years age group.

Gender

Figure 8 illustrates the directly age-standardised rates (DSR), by PCT, for the total number of hospital episodes primarily attributed to a vascular disease from 2006-2010. The vascular diseases included within the total are: diabetes, varicose veins, renal failure, hypertension, chronic heart disease, stroke, abdominal aortic aneurism and carotid stenosis. Across all PCTs, males have higher DSRs than females while Warrington has the highest DSR for males and Western Cheshire, the highest DSR for females. This analysis suggests that while gender is a risk factor for vascular disease and that there are differences between the areas particularly in respect of male hospital episodes it is perhaps not as important in this context as location since all three PCTs recorded, for male and females, lower DSRs than the regional average.

Figure 8: Total Vascular Disease Hospital Episodes, directly age-standardised rates 2006-2010



Source: NWPHO from Hospital Episode Statistics

Disability

There are several ways of quantitatively mapping disability across the network, such as through census data, Disability Adjusted Life Years or a variety of benefit claimant data such as Disability Living Allowance. However, disability data forms a large part of the suite of indicators that make up IMD and therefore this report uses IMD as a proxy for identifying those areas where disability incidence is high. The impact of service reconfiguration relating to IMD is discussed earlier. Mobility and the accessibility of services might be an issue for this group and a geospatial analysis is discussed later in this report. Whilst it is possible that individuals will be disadvantaged by a service reconfiguration, it is unlikely that disabled people as a group will experience any particular discrimination so long as communities in deprived areas are adequately served by any new arrangements. However, commissioners will need to familiarise themselves with the general accessibility of each potential service premises to ensure that relocation from one site to another does not result in reduced access.

Gender Reassignment

Understanding the impact of service provision for this group is difficult due to the scarcity of reliable population data.[11] Although there is some empirical evidence that long term oestrogen therapy may improve vascular function for male to female transsexuals[12], there is little to suggest that this group would be specifically affected by a reconfiguration of services so long as the generic service provision was considered non-discriminatory. Whilst quantitative data is unlikely to provide much to help predict the specific impact of service development on this group and assess potential barriers to access, if efforts are made to ensure that consultation about service development is accessible to those members of this population group and any necessary mitigations are applied based on the consultation results, then this should be sufficient to fulfil the conditions of the equality duty.

Pregnancy and Maternity

Although vascular changes occur during pregnancy and there is an increased risk of hypertension and diabetes (gestational diabetes)[13] and that this predicts an increased risk of CVD in later life[14], data does not suggest that the rate of pregnancy across the Network would impact the burden of disease in the context of equality of access to vascular services. According to the NHS Information Centre, Western Cheshire has the lowest birth rate per 1,000 female population aged 15-44 years (63.0; 95% CI 64.2-69.2)[15]. Warrington has the highest rate (66.7; 95% CI 61.1-65.0) with Wirral in the middle (66.0; 95% CI 63.7-68.3). These figures suggest there is no significant difference between the areas.

More relevant in the consideration of equality in regards to women who are pregnant or under the care of maternity services is the accessibility of vascular services in the context of transport and the quality and availability of local maternity services. This again assumes that women who are pregnant receive non-discriminatory services once they arrive at the designated arterial centre.

Marriage and Civil Partnership

There is no evidence to suggest that this protected characteristic is at risk of discrimination.

Sexual orientation

There is little available research to suggest that sexual orientation has a direct link with vascular disease although research, predominantly from the United States, has indicated that Lesbian, Gay, Bisexual and Transgender (LGBT) groups may be at higher risk of some health conditions such as cancer[16]; and also may be at higher risk of engaging in health harming behaviours such as smoking and excessive alcohol consumption[17]. In this regard, it would be acceptable to assume that as long as service provision is non-discriminatory, LGBT groups would not be significantly disadvantaged by service reconfiguration specifically in relation to their protected characteristic.

Religion or belief

It is difficult to quantitatively assess the impact of service redesign on religion or belief. Commissioners should rely on the strength of their consultation to identify any local groups at risk of unfair treatment. It is likely that any equality issue relating to religion and belief is something that local trusts are already actively engaged upon within the context of wider provision, however, in the context of vascular services, the commissioners' attention are drawn to the service needs of those who, are opposed to certain interventions (such as blood transfusions) on the basis of their religion of belief.

Geospatial Analysis

Geospatial analysis forms a significant part of many EqIAs. The location of services and the availability of public and private transport access clearly has the potential to adversely affect certain populations. For example, a service located where there is infrequent public transport access will adversely affect those most likely to use this form of transport such as people on low incomes and older people. It is possible to develop a quantitative geospatial analysis to investigate how travel might impact those groups with protected characteristics[18, 19] but it is important to consider proportionality. Whilst geospatial analysis is particularly pertinent in the provision of emergency, primary care or other community based services, for tertiary health services there is likely to be a greater tolerance of distance against the impact of non-treatment. In other words, people choosing[o] to access specialist, possibly life-saving, treatment might be less concerned about where they need to go to get this treatment. A recent study by Comber (2011)[10] has shown that distance to

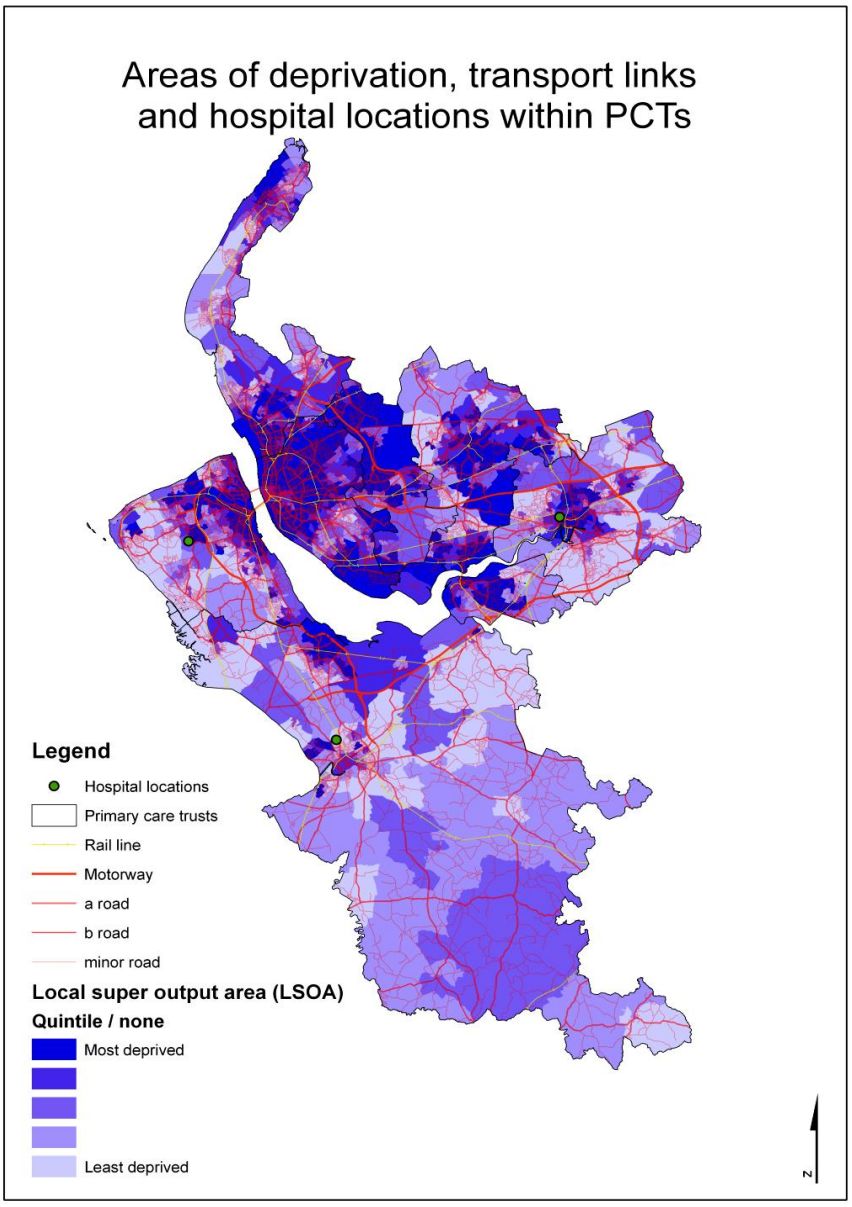
[o] This scenario makes a distinction between planned and unplanned specialist services (i.e Emergency Services)

hospital is not a good predictor of difficulty in accessing services but that car ownership is. Further the research finds that the concept of *choice* is one that underpins assessments of accessibility and that choice is governed by factors such *as "cost, previous experience, reputation (first and second hand), perceived quality of service, convenience etc."* [10] This would suggest that a geospatial analysis should not focus exclusively on distance or travel time but on transportation availability. Therefore key aspects of consideration would need to be car ownership and public transport access.

Additionally, in the context of patient choice it is important to recognise that patients may elect to receive treatment in a specialist centre that is accessible from their residence but not commissioned through the Cheshire Network. For example, it may be easier and/or preferable for residents of the Wirral to access services in Liverpool; residents in Western Cheshire to access services in Eastern Cheshire, Staffordshire and North Wales; or residents in Warrington to access those in Greater Manchester or Lancashire.

In the burden of disease analyses and also those done with specific reference to protected characteristics, it can be argued that IMD at a Lower Super Output Area level is a suitable proxy for identifying areas where potential equality challenges could arise. It has also been discussed that the nature of any potential inequality is likely to be based on transportation access to the service for the patients and their families or carers. In order to help understand the geospatial aspect of this service reconfiguration Figure 9 shows the locations of the Hospital sites in relation to transport links and areas of deprivation.

Figure 9: Map of Hospital Location, transport infrastructure and IMD 2010



Source: Department for Communities and Local Government and ONS, 2012

This geospatial analysis considers that travel distance is not a good proxy for service accessibility and therefore equality of access. However, since transport availability is related to service accessibility, commissioners may wish to consider whether a further, specialist analysis of transport availability is required.

Conclusion

This report has been commissioned to provide evidence upon which to base an Equality Impact Assessment. There are three aspects to this evidence presentation. Firstly, the report presents evidence of the burden of vascular disease across the network; secondly, the report considers research relating to the protected characteristics and vascular disease and prevalence data; and finally, the report considers the geospatial aspects of service provision.

The burden of disease analyses clearly show across several measures that Wirral has the largest number of people accessing treatment for vascular disease. However, the percentage, CR or DSR aspect of these analyses shows that it is the Warrington population, on a person for person basis, who have the greatest need for, or use of, treatment services.

In consideration of the protected characteristics, there is little evidence to suggest that any particular group or community will be specifically disadvantaged by the location of an arterial centre, providing that the centre itself maintains a high level of anti-discriminatory practice. However, the analysis of Hospital Episodes by age does appear to show a pattern of different service usage across the three areas. Whilst it is not possible to draw any definitive conclusions about the nature or reason behind the figures without further qualitative information, it does appear that the older population in Warrington make greater use of hospital services than in the other two areas and because they are also likely to be less mobile than other groups, they are a group that may be at risk of being disproportionately affected by service reconfiguration and appropriate mitigation or further investigation is recommended.

The geospatial appraisal argues that it is possible to develop a quantitative case for the arterial centre based upon figures of car ownership and public transport access. However, such analysis would require specialist input and would need to remain proportionate, given that people are likely to be more tolerate of travel in respect of attending a specialist or tertiary 'centre of excellence'.

Overall the evidence suggests that the location of an arterial centre is unlikely to have a hugely disproportionate effect on groups of individuals that have characteristics which are protected under the Equality Act. However, this is not to say that communities or individual groups will not be affected. Indeed it is very likely that there will be groups who believe that they have been disadvantaged by the agreed location of the arterial centre. Ultimately, it is for commissioners to decide how they will balance and mitigate the competing facets of the number of people requiring treatment and likelihood that someone in a given area will require treatment. This implies that commissioners would either need to identify a location that is equally accessible[p] to all populations or else make a case that either the numbers or

[p] Accessibility in this case refers to mobility and transport and not distance

the prevalence is a more important factor in service provision[q] and introduce measures to mitigate the impact on any communities potentially disadvantaged by the decision.

[q] This could be done by quantifying the economies of scale of locating close to the greater numbers or by quantifying the potential 'prevention' gains from locating near the greatest prevalence.

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Published: June 2012

ISBN: 978-1-908929-10-5