Warrington

Joint Strategic Needs Assessment (JSNA)

Cardiovascular Disease Needs Assessment and Equity Audit

2013/14

June 2014

EXECUTIVE SUMMARY

INTRODUCTION

Cardiovascular disease (CVD) is a common condition caused by atherosclerosis (a hardening of the arteries). It represents a single family of diseases and conditions linked by common risk factors. These include coronary heart disease (CHD), stroke, diabetes, hypertension (high blood pressure), chronic kidney disease, hypercholesterolemia (high cholesterol), peripheral arterial disease and vascular dementia. Mortality rates from CVD continue to fall, but it still remains the biggest killer in the UK. CVD causes more than 200,000 deaths per year – around 1 in 3 premature deaths (ages less than 75) in men and 1 in 5 premature deaths in women. The burden of these conditions falls disproportionately on people living in deprived circumstances and on particular ethnic groups. Mortality from CVD in the most deprived socioeconomic category is about three times higher than in the least deprived.

Mortality rates from CVD in Warrington are consistently significantly above the average for England. Using a needs assessment and equity audit approach, this report examines in detail the local pattern of disease and associated risk factors. This report should be read in conjunction with other JSNA Chapters which deal with CVD risk factors, such as Smoking, Healthy Weight, Physical Activity and Alcohol.

KEY FINDINGS

Risk Factors

- Data from local surveys highlights that smoking prevalence has decreased substantially across Warrington as a whole over recent years. However, prevalence remains high amongst the population living in the most deprived 30% of areas
- The prevalence of unsafe drinking has increased slightly in contrast to national figures
- The percentage of obese residents in Warrington has increased slightly in recent years. Current figures suggest that 55% of adult residents are overweight or obese
- 53% of residents report 2 or more CVD lifestyle risk factors (smoking, overweight/obesity, bad diet, low levels of physical activity, alcohol consumption higher than recommended maximum). This equates to approximately 84,000 adults in Warrington. 21% of residents (approx. 33,000) report 3 or more risk factors.
- GP recorded prevalence of hypertension is 13.5%; slightly lower than the average for England, however modelled estimates suggest there may be over 21,000 people undiagnosed
- Recorded prevalence of diabetes is similar to England (6.1% compared to 6.0%). Estimates suggest there may be a further 2,600 local residents as yet undiagnosed

Mortality

- There are almost 1800 deaths per year in Warrington, of which around 30% are due to CVD. Amongst men, compared with England, a higher proportion of deaths are due to CVD
- For men and women, the proportion of all deaths in Warrington due to Ischaemic Heart Disease (IHD) is higher than the average for England
- CVD death rates have decreased substantially over previous decades, but local rates remain significantly higher than England amongst both the all-age population and those dying prematurely (those aged under 75).
- If Warrington experienced the same death rates as England, there would be 56 fewer deaths from CVD per year
- In Warrington, the vast majority (over 80%) of the excess mortality is amongst people living in the most deprived 40% of areas
- IHD is the biggest contributor locally to the comparatively higher rates of CVD deaths: IHD death rates consistently exceed the average for England by over 20%
- The biggest gap in rates within Warrington is in deaths is amongst those aged under 75 years

Detection and Management in Primary Care

NHS Health Checks

- During 2013/14 11.9% of the eligible population in Warrington had received an NHS Health Check; this is higher than the average for England of 9% which was achieved in 2013/14. This is a considerable improvement on previous years when uptake in Warrington was considerably lower than the average for England: At the end of 2012/13, across England as a whole, 8.1% of the eligible population had received a health check, compared with only 3.6% in Warrington. In 2011/12 less than 1% of the Warrington population received a health check, compared with 7.1% across England.
- There is considerable variation at GP practice level: the proportion screened ranges from 2% to 33%
- GP practices serving deprivation quintiles 2 to 4 (Quintile 1 is the most deprived, Quintile 5 is least deprived) have screened the highest proportion of patients; uptake is lower in the most and least deprived quintiles.
- Based on data extracted from GP systems[1], analysis of the initial outcomes of the health checks suggests that patients with lifestyle risks may not be being referred on to appropriate services in sufficient numbers

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[1] For 20 of the 26 GP Practices

Primary Care (QOF) Disease Management Indicators

- In the main, local performance on the majority of the CVD risk factor and disease management indicators monitored in GP practices is in-keeping with the England average. Areas where local performance is lower than national include:
  - Recording of blood pressure amongst hypertensive patients is slightly lower than England
  - Foot examination and risk assessment amongst diabetics is significantly worse than England
  - The proportion of Chronic Kidney Disease (CKD) patients with a recent recording of blood pressure is slightly worse than England
- In general, whilst there is variation within Warrington on most of the risk factor and disease management indicators, there is no strong association with deprivation, except for two IHD management indicators:
  - The proportion of CHD patients with cholesterol in the recommended range is substantially lower in the group of Practices serving the most deprived quintile
  - The proportion of CHD patients on beta blockers is also substantially lower in Quintile 1 Practices
- The rate of patients excluded from reporting on many of these indicators is higher in Warrington than across England as a whole. Whilst there are valid reasons for Practices to except patients from reporting, further investigation may be useful, as high exception rate could mean that fewer patients are receiving the right management intervention.
- The rate of exceptions for many indicators appears to be higher in those GP practices serving people living in Quintile 1. It would be useful to further investigate this.

Treatment in Secondary Care

- Rates of diagnostic and treatment procedures in Warrington are in-keeping with the average for England. However, given the higher levels of need this may not be equitable: Use to need ratios for angiography, angioplasty and coronary artery bypass grafts are all lower in Warrington than for England.
- Approximately 3,500 hospital admissions per year in Warrington result from CVD. 35% of these are due to IHD
- Emergency hospital admission rates for IHD are significantly higher than the England and Cheshire and Merseyside average
- There is substantial variation in admission rates within Warrington, following the pattern of deprivation

Spend

- Data on NHS allocated expenditure is available through the Programme Budgeting data that the Department of Health collate and produce. During 2012/13 NHS Warrington spent £23,247,367 on problems of circulation
- This is less than was spent in 2011/12, and per 100,000 population, equates to just over £1 million less than the average for England

- Given the higher levels of need identified in Warrington, comparatively higher levels of spend may be expected

RECOMMENDATIONS

- A comprehensive CVD action plan needs to be developed. This action plan should consider ways to further explore issues raised in the needs assessment and address and reduce the prevalence and impact of CVD in Warrington, in order to improve health outcomes in relation to CVD, and the resource impact of CVD.
- Continued, appropriately scaled, targeted and universal primary prevention interventions to reduce lifestyle risk factors within the population are needed:
  - Smoking: Targeted interventions are needed to address the high prevalence amongst populations living in the most deprived areas; latest prevalence data suggests targeting the most deprived 30% would be appropriate
  - Alcohol: Population-wide interventions and further awareness raising amongst health professionals to highlight the risk to health of regularly consuming more than the recommended alcohol units
  - Overweight and obesity: Population-wide interventions and multi-agency work required to address both the societal and individual risk factors
- Continued roll-out of the NHS Health Check programme is needed to ensure that individuals at risk of CVD are identified as early as possible. A targeted approach is also needed to ensure that those Practices serving harder-to-reach populations are inviting and screening people appropriately
- Further work is needed with GP Practices to ensure that the correct READ codes are being used in Primary Care to record the results of the NHS Health Check
- Continued monitoring of results from the Health Checks is needed to ensure that appropriate advice and referrals are being made, and the opportunity that the health check offers is maximised
- Work to better understand the reasons for the comparatively higher rates of QOF exception reporting in Warrington would be useful to ensure that no opportunity is lost in Primary Care to reduce risk of a CVD event
- A repeat and completion of the 2008/09 Primary Care mortality audit may help identify whether patients are dying prematurely prior to having received a diagnosis of CVD. This would explain the higher death rates and the lower level of secondary care treatment and expenditure.

1. INTRODUCTION

Cardiovascular disease (CVD) mortality in Warrington is consistently significantly above the average for England. Using a needs assessment and equity audit approach, this report examines in detail the local pattern of disease and associated risk factors. The work also looks in-depth at primary and secondary prevention interventions and treatments and maps local care pathways, to assess the extent to which current provision meets local need. This will ensure that the pattern of excess disease in Warrington is better understood, and will inform the development of a comprehensive CVD strategy.

This work has been undertaken as part of the JSNA programme for 2013/14 and has been overseen by the JSNA Steering Group. A small working group was established, consisting of members of the Public Health Department, the Warrington Clinical Commissioning Group (CCG) and NHS England.

1.1 Background

CVD is a common condition which includes coronary heart disease, stroke, diabetes and kidney disease. Although specific symptoms and disease may manifest differently in different individuals, CVD is best considered as a family of linked diseases with common risk factors. CVD affects the lives of over 4 million people in England. In 2012 it caused 28% of all deaths in England (131,660 a year) and is responsible for a fifth of all hospital admissions. It is the largest cause of long-term ill health and disability, impairing the quality of life for many people. The burden of these conditions falls disproportionately on people living in deprived circumstances, and on particular ethnic groups, and accounts for the largest part of the health inequalities in our society.

The UK as a whole experiences relatively poor CVD mortality rates compared to other Western European countries, and the Department of Health has recently released a Cardiovascular Disease Outcomes Strategy (DH, 2013), stressing the need for multi-agency sustained and co-ordinated action to improve mortality rates. The strategy also emphasises the need to improve quality of life, and the quality and safety of care.

Comprehensive action to address CVD should also produce cost savings. Evidence suggests that a reduction of CVD events such as heart attacks, strokes, etc. should produce both health gain and savings for the health care economy. A costing report (National Institute for Health & Clinical Excellence (NICE), 2010) on the prevention of CVD in England has estimated that significant cost savings are possible by implementing NICE guidance.

The CCG have prioritised a reduction in the rate of CVD mortality as one of their 3 local quality premium priorities. The CCG indicator used to measure progress on this is the 'directly standardised mortality rate from CVD for people ages under 75 years, per 100,000 population'. Although there are some technical differences, this is broadly in-keeping with the Public Health Outcomes Framework indicator which will be used to benchmark and monitor progress in rates for the resident population of Warrington.

1.2 Methods and Scope

CVD has a number of different risk factors. This report presents findings from analysis which has looked at primary prevention, secondary prevention and risk factor management, and disease detection and management

Evidence shows that the burden of disease falls disproportionately on people living in more disadvantaged areas. Therefore, where possible, all analysis has incorporated socio-economic deprivation, and in the main, deprivation quintile has been used as the basis for the equity analysis[2].

2. WHO IS AT RISK AND WHY

CVD is a common condition that represents a single family of diseases and conditions linked by common risk factors. Many people with one form of CVD will also suffer from another condition and yet opportunities to identify and manage these can be missed. Patients often receive care from several different teams both in hospital and in the community, creating fragmented care. Around 4.9 million people aged 16 or older in England have CVD (WHO, 2011). Coronary heart disease is the main preventable cause of death for both men and women in the UK. The burden of these conditions falls disproportionately on people living in deprived circumstances and on particular ethnic groups. Mortality from CVD in the most deprived socioeconomic category is about three times higher than in the least deprived. There is a sharp divide between the north and south in prevalence of CVD, with rates being much higher in the North of England and Scotland. Genetic inheritance of conditions also contributes to differences in outcomes. Risk of CVD is multi-factorial and divided into two categories – modifiable and non-modifiable risk factors (World Heart Federation, 2011).

Non–Modifiable Risk Factors:

- Age - Risk of stroke doubles every decade after age 55.

- Family history - If a first-degree blood relative (parent or sibling) has had coronary heart disease or stroke before the age of 55 years (for a male relative) or 65 years (for a female relative) then the risk is increased.

- Gender - Men are at greater risk of heart disease than a pre-menopausal woman. Once past the menopause, a woman's risk is similar to a man's. Risk of stroke is similar for men and women.

- Ethnic origin - Individuals with African or Asian ancestry are at higher risk of developing CVD than other racial groups.

- Pre-existing diabetes and pre-existing kidney disease.

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[2] All 127 local areas within Warrington have been grouped into quintiles based on how they rank on a national socio-economic deprivation scale (Indices of Multiple Deprivation 2010). Quintile 1 consists of those areas that rank within the 20% most deprived in England, Quintile 5 is those areas falling within the least deprived 20% nationally

Modifiable Risk Factors:

In more than 90% of cases, the risk of a first heart attack is related to nine modifiable risk factors. These are listed below:

- Hypertension is the single biggest risk factor for stroke. It also plays a significant role in heart attacks.

- Abnormal blood lipid levels - High total cholesterol, high levels of triglycerides, high levels of low-density lipoprotein (LDL) or low levels of high-density lipoprotein (HDL) cholesterol all increase the risk of heart disease and stroke. Abnormal blood lipid levels are estimated to cause about 31% of coronary heart disease and 11% of stroke worldwide.

- Diabetes is a major risk factor for coronary heart disease and stroke. Having diabetes makes an individual twice as likely to develop CVD. The high blood glucose (sugar) levels associated with type 1 diabetes or type 2 diabetes can damage the arteries. Many people with type 2 diabetes are also overweight or obese.

- Deprivation, chronic stress, social isolation, anxiety and depression increase the risk of heart disease and stroke.

- Certain medicines may increase the risk of heart disease, such as the contraceptive pill and hormone replacement therapy (HRT).

- Left ventricular hypertrophy (LVH) is a risk factor for cardiovascular mortality.

- Tobacco use - Smoking or chewing tobacco increases risks of CVD. The risk is especially high for those who started smoking when young, who smoke heavily, or are female. Passive smoking is also a risk factor for CVD.

- Physical inactivity increases the risk of heart disease and stroke by 50%.

- Obesity is a major risk factor for CVD and predisposes individuals to diabetes. Diabetes is, in turn, a risk factor for CVD.

- Having one to two alcoholic drinks a day may lead to a 30% reduction in heart disease, but above this level alcohol consumption will damage the heart muscle.

- Psychosocial stress can lead to increased blood pressure levels and the hormones associated with stress are thought to increase blood glucose levels.

- Diet – it is important to consume a healthy diet: A diet high in saturated fat increases the risk of heart disease and stroke. Salt intake should also be reduced. Consuming the recommended portions of fruit and vegetable intake reduced CVD risk

The key CVD risk factors that can be modified are: smoking, a poor diet, obesity, lack of physical activity and high alcohol consumption (Emberson et al. 2004; Yusuf et al. 2004). These risk factors tend to 'cluster together'. Thus people who smoke are more likely to have a poor diet and exercise less. This 'clustering' also tends to have a disproportionate effect on people who are disadvantaged, further accentuating health inequalities. Furthermore, having one cardiovascular condition increases the likelihood of developing others.

This section presents information on the prevalence of various risk factors in the local population.

2.1 Lifestyle Risk Factors

A comprehensive, large scale survey of adults in Warrington was undertaken early in 2013 to update the information held from previous local lifestyle surveys that were done in 2001 and 2006. The survey collected information on a wide range of factors that impact on an individual's health and wellbeing, a number of these being CVD risk factors.

2.1a) Smoking

Overall, 13% of Warrington residents responded that they currently smoke; this suggests that there are approximately 20,600 adult smokers in the borough. These figures represent a substantial reduction in smoking prevalence within Warrington since 2006, when prevalence was estimated to be 20.4%. As in 2006, current estimates suggest that there is a slightly higher proportion of male smokers – 14.6% compared with 11.4% of women.

Prevalence rates amongst all groups have decreased since the time of the last survey, and although there is still wide variation within Warrington and amongst age groups, encouragingly, findings suggest that smoking rates amongst the most deprived quintile have decreased considerably since 2006 and the gap has narrowed slightly. Residents of the most deprived quintile report highest smoking prevalence (26.4%). Men aged 40-64 years living within the most deprived quintile report highest prevalence of all, at 29.7%; this is closely followed by younger women (aged 18-39) from the most deprived quintile (29.5%). Detailed analysis suggests that it is residents living in the 30% most deprived areas who have similarly high smoking prevalence rates.

2.1b) Alcohol consumption

Survey respondents were asked questions regarding their drinking habits. From these responses, it is possible to determine unsafe drinking levels. Latest Department of Health guidance states that in order to protect health, men should not regularly exceed 3-4 units per day, and women should not regularly exceed 2-3 units per day. At population level, and in order to derive comparative figures, the risk categories are defined based on average weekly consumption: for men 21 units or less per week is deemed 'low risk', 22 to 49 units 'medium', and more than 50 units per week is 'high' risk. For women the equivalent figures are: 14 units or less 'low risk', 15 to 35 units 'medium' and more than 35 units per week 'high' risk.

The prevalence of *any* alcohol consumption amongst adults (aged 18+) is high, with men drinking more than women. 90% of male respondents and 83% of females reported that they drink alcohol at least occasionally. Directly comparable national figures are not

available, but the Health Survey for England[3] results indicate that across England as a whole 87% of men and 81% women drink, but these figures are based on a 16+ population.

In terms of levels of unsafe alcohol consumption; overall, *of those who drink*, 21% of respondents indicated that they drink more units per week than considered safe. This represents a small increase on the 2006 figure of 19.6%.

In all age-bands, and across all deprivation quintiles, *of those who drink,* a greater proportion of men than women drink to unsafe levels; (24.5% of men overall in Warrington, compared with 17.4% of women). However, the proportion of women drinking unsafely has increased considerably from the 13.8% figure reported in 2006. Highest rates of unsafe levels of alcohol consumption for both sexes are amongst the 40-64 age band (28.0% men; 21.2% women). Amongst older drinkers (aged 65+) substantially more men than women drink to unsafe levels (22.9% compared with 11.8% amongst women).

Whilst there is variation within Warrington, it does not follow the traditional deprivation pattern. For men there is no real association between deprivation and high levels of unsafe consumption. Amongst women, there is an inverse association; rates *increase* as deprivation *decreases;* the highest rate is amongst women from the least deprived quintile (21%), compared to 15% in the most deprived.

2.1c) Physical Activity

The Chief Medical Officer's (CMO) latest guidance states that adults should aim to be active daily, and that activity should add up to the equivalent of at least 150 minutes of moderate[4] intensity activity, in bouts of 10 minutes or more, over a week[5].

Respondents were asked to quantify the amount of moderate and vigorous physical activity they do in an average week[6]. Overall, 76% of residents are achieving the CMOs recommended amount of physical activity. As may be expected, prevalence decreases with age; 81% of 18-39 years are active, this compares with 69% of those aged 65+.

On average, men are more active than women; 79.9% of men meet the CMOs recommendations, compared with 72.9% of women.

Level of physical activity is associated with deprivation; 69.6% of residents of Quintile 1 are active to recommended levels. This compares with 80.3% of residents of Quintile 5.

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[3] Health Survey for England 2011, Alcohol consumption amongst 16+ population
[4] Moderate intensity activity is defined as any activity that causes you to get warmer and breathe a little harder.
[5] Comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week, or a combination of moderate and vigorous. Vigorous intensity activity is considered to be equivalent to double the minutes of moderate intensity – e.g. 10 minutes of vigorous activity is considered equivalent to 20 minutes of moderate intensity
[6] The CMO guidance states that everyday activity such as active travel, heavy housework and occupational activity counts towards the 150 minute guideline. This definition differs from that used in the Sport England Survey, which excludes occupational activity and housework. Thus figures are not comparable with Sport England findings or those reported in the Public Health Outcomes Framework.

2.1d) Diet
Survey respondents were asked questions about their usual diet.

Fruit and vegetable consumption: 43.3% of respondents indicated that they ate less than the recommended 5 portions of fruit and/or vegetables a day. This is a substantial improvement since the last survey, when 78% of residents reported eating less than the recommended 5 a day, and suggests that the health promotion message about the benefits of fruit and vegetables is reaching people.

Takeaways and fast food: 28.8% of residents reported that they have takeaways or fast food at least weekly, and 15.1% of residents report consuming 3 or more convenience foods per week.

Men aged 18-39, men aged 40-64, and women aged 18-39 are least likely to consume the recommended 5+ portions of fruit and vegetable per day (all approximately 48%). Men aged 18-39 have by far the highest rates of takeaway and fast food consumption, with 43.7% having takeaways at least weekly, and 30.6% eating 3 or more convenience foods per week.

There is considerable variation across Warrington which follows the pattern of deprivation, with lower consumption of fruit and veg and higher rates takeaway and fast food consumption in the more deprived areas.

2.1e) Excess Weight
The survey questionnaire asked respondents to state their weight and height. From this, a measure of obesity can be derived. Those with a body mass index (BMI) of 25 or over are considered overweight. A body mass index of 30 plus indicates obesity.

All Excess Weight
The percentage of *all overweight or obese* residents has increased from 53.2% in 2006 to 55.1% in 2013. A prevalence of 55.1% suggests that approximately 87,300 adults in Warrington are overweight or obese.

A higher proportion of men are overweight or obese, (62.4% compared with 47.8% of women) with highest prevalence amongst men aged 40-64 (almost 70%).

More detailed analysis highlights a different pattern between the prevalence of overweight (BMI 25-29.9) and obesity (BMI 30+):

Overweight
Variation in overweight prevalence within Warrington isn't correlated with deprivation: prevalence of overweight is highest amongst residents from Quintiles 2 and 3, and lowest in Quintile 1.

Overall, a higher proportion of men are overweight; 43.3% compared with 28.2% of women. Amongst women, overweight prevalence is highest amongst those aged 65+ (35.3%); amongst men, both the 40-64 age group (46.9%) and the 65+ age group (45.9%) have very high prevalence.

Obesity

Obesity within Warrington has also increased since 2006; with 19.3% of residents currently obese; this compares with 18.2% at the time of the last survey. Very similar obesity prevalence is seen in women (19.6%) and men (19.0%). By age group, obesity prevalence is highest in people aged 40-64 (22.6%) and those aged 65+ (20.7%); and lowest amongst those aged 18-39 (14.3%).

Unlike overweight, prevalence of obesity does correlate closely with deprivation. Prevalence in Quintile 1 is almost 26%; this compares with 15% in Quintile 5.

2.1f) Emotional wellbeing and personal resilience

Emotional or mental wellbeing concerns how an individual is feeling, how they cope with day to day life, and their capability to deal with problems. It is linked to having control over one's life and a sense of belonging and connection with other people. Mental wellbeing is both an outcome and a determinant of physical health. Improving mental wellbeing is a key national priority and is included in the Public Health Outcomes Framework.

Survey respondents were asked a series of questions from the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)[7]. WEMWBS is a validated measure of wellbeing that is used in national and regional surveys. Responses to 7 questions are scored between 1 and 5, so total scores can range from 7 to 35. A score of 7 to 22 indicates low mental wellbeing.

Across Warrington as a whole 24% of respondents have low mental wellbeing. Rates are similar amongst men and women, but there is variation by age; low mental wellbeing is less prevalent amongst those aged over 65 years (19%) compared with 25% in those aged 18-39 and aged 40-64. The association with deprivation is very strong; 35.7% of residents from Quintile 1 have low mental wellbeing, compared with 19.5% of those from Quintile 5.

2.1g) Multiple Lifestyle Risks:

There has been much research into the clustering of unhealthy lifestyle behaviours and the impact of these. The World Health Organisation (WHO, 2002) estimated that 30% of the burden of illness in developed countries is associated with four main unhealthy behaviours: smoking, excess consumption of alcohol, poor diet and low levels of physical activity. These behaviours in turn are linked to high cholesterol and overweight/obesity, which are associated with a further 15 per cent of the disease burden in these countries. Prevalence of these behaviours locally, nationally and internationally are clustered amongst more disadvantaged populations.

Based on findings from the survey, 53% of adults reported 2 or more lifestyle risk factors[8]. Extrapolated across Warrington, this suggests that approximately 84,000 adults aged 18+ have 2 or more lifestyle factors that increase their risk of developing CVD. Approximately 34,000 have three or more of these lifestyle risk factors.

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[7] The 7 item WEMWBS has been used. Minimum score is 7 and maximum is 35
[8] Lifestyle risk factors included: Smoking, eating less than 5 portions of fruit/veg per day, unsafe levels of alcohol consumption, BMI 25+, not meeting CMO recommendations for physical activity

2.2 Hypertension: Based on latest Quality Outcomes Framework (QOF) data[9] there are approximately 28,200 people in Warrington known to have hypertension. Modelled estimates[10] suggest that there may be as many as 49,500 people in total. This means there may be up to 21,300 people in the borough who have high blood pressure, but as yet haven't been diagnosed.

2.3 Diabetes: According to latest QOF data[9] there are 10,200 people aged 17+ in Warrington diagnosed with diabetes. However, modelled estimates[11] which take into account the demographic and socio-economic structure of Warrington suggest that there may be as many as 12,800 people with diabetes. This means that there could be around 2,600 people who don't yet know that they have the condition.

2.4 Chronic Kidney Disease: Based on latest QOF data[9] there are approximately 6,900 people aged 18+ in Warrington on the CKD register. However, modelled figures, which use prevalence estimates derived from a UK research study[12], suggest that there may be as many as 13,900 people with CKD. This means that there could be up to 7,000 people who don't yet know that they have the condition.

3. THE LEVEL OF NEED IN THE LOCAL POPULATION

3.1 CVD Mortality

In total, there are approximately 1780 deaths per year in Warrington; with an average of approximately 520 of these occurring as a result of CVD[13]. Comparative analysis available from Public Health England[14] highlights that amongst men, in terms of absolute numbers, a higher proportion of deaths in Warrington are due to CVD than across England as a whole: Within Warrington, over the period 2009-2011, 33.2% of all male deaths were due to CVD, compared with 31.5% across England. For women, the Warrington figure (30.1%) was more in-keeping with that of England (30.6%). However, for both men and women, as chart 3.1 highlights, compared with England, a greater proportion of deaths in Warrington result from IHD.

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[9] Health and Social Care Information Centre, Quality and Outcomes Framework (QOF) for April 2012 - March 2013, England
[10] Association of Public Health Observatories: Hypertension Prevalence Model, Dec 2011
[11] Association of Public Health Observatories: Diabetes Prevalence Model – User Defined, June 2010
[12] Stevens et al Chronic Kidney disease management in the United Kingdom: NEOERICA project results. Kidney International (2007) 72, 92–99
[13] Revisions to the ICD coding of underlying cause of death in 2010 has reduced the number of deaths recorded as resulting from CVD by approximately 5% from 2011. A comparability ratio has been applied to deaths which occurred prior to 2011 to enable consistent trend analysis. Appendix A provides full detail.
[14] Public Health England (2013) Cardiovascular Disease Local Authority Health Profile: data download

**Chart 3.1: Contribution of CVD to all deaths: Warrington and England 2009-2011**

Contribution of Cardiovascular Disease Deaths to All Cause Mortality England and Warrington 2009-2011
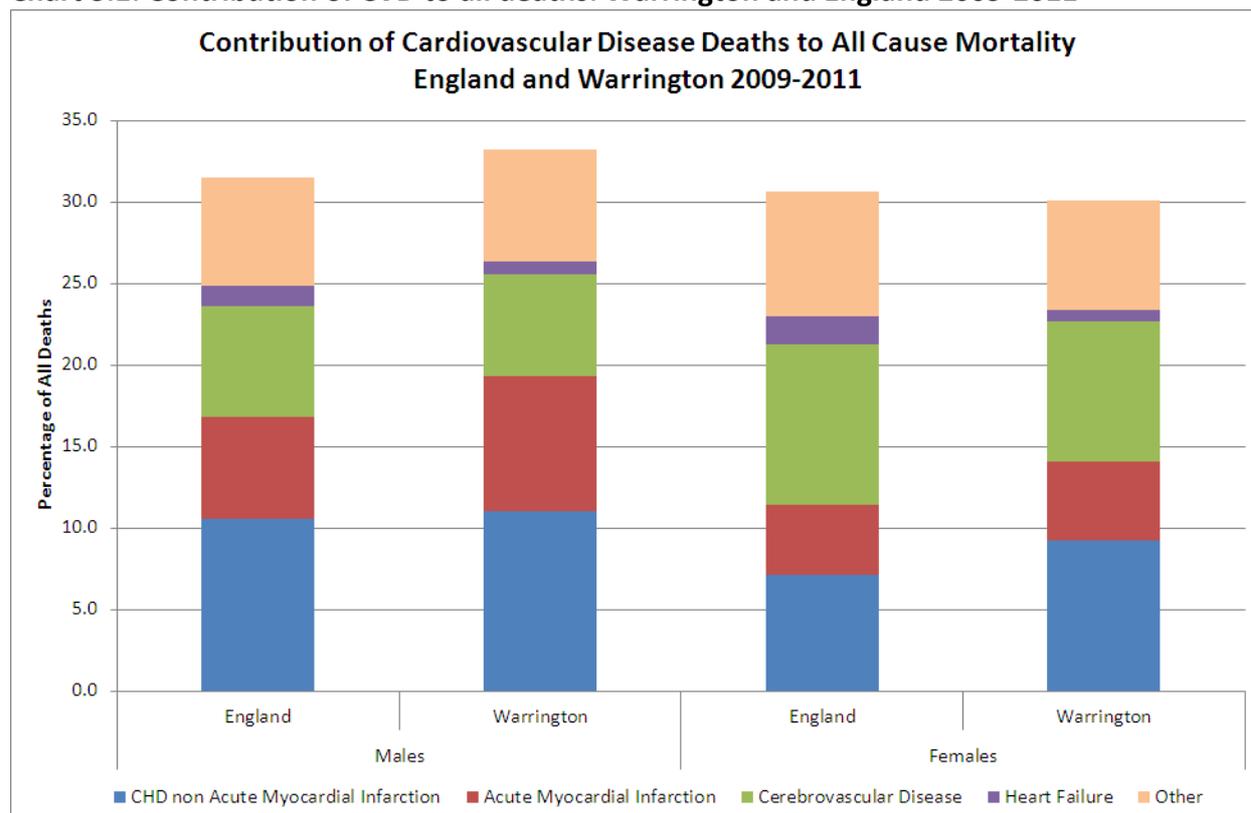
Data source: Public Health England/SEPHO Cardiovascular Disease Local Authority Profile

All CVD Deaths - All Age Mortality Rates: Within Warrington, death rates from CVD amongst the all-age population have decreased substantially over previous decades. Since 1995[15], rates have decreased by 48.7%; this, however, is less than the decrease observed across England as a whole (50.4%), and thus the gap between Warrington and England has widened slightly. Current rates[16] are approximately **13%** above the average for England; this difference is statistically significant, and CVD is the biggest cause of reduced life expectancy within Warrington. Chart 3.2 shows the trend over time.

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[15] Baseline rates are for the 3 year period 1995-1997

[16] Current rates are for the period 2010-2012 (the most recent time period for which national comparative data is available).

Chart 3.2: Trend in All Age CVD Mortality Rates, 1995 to 2012

Trend in Cardiovascular Disease Mortality Rates - All Ages
Directly Standardised Rates per 100,000 population
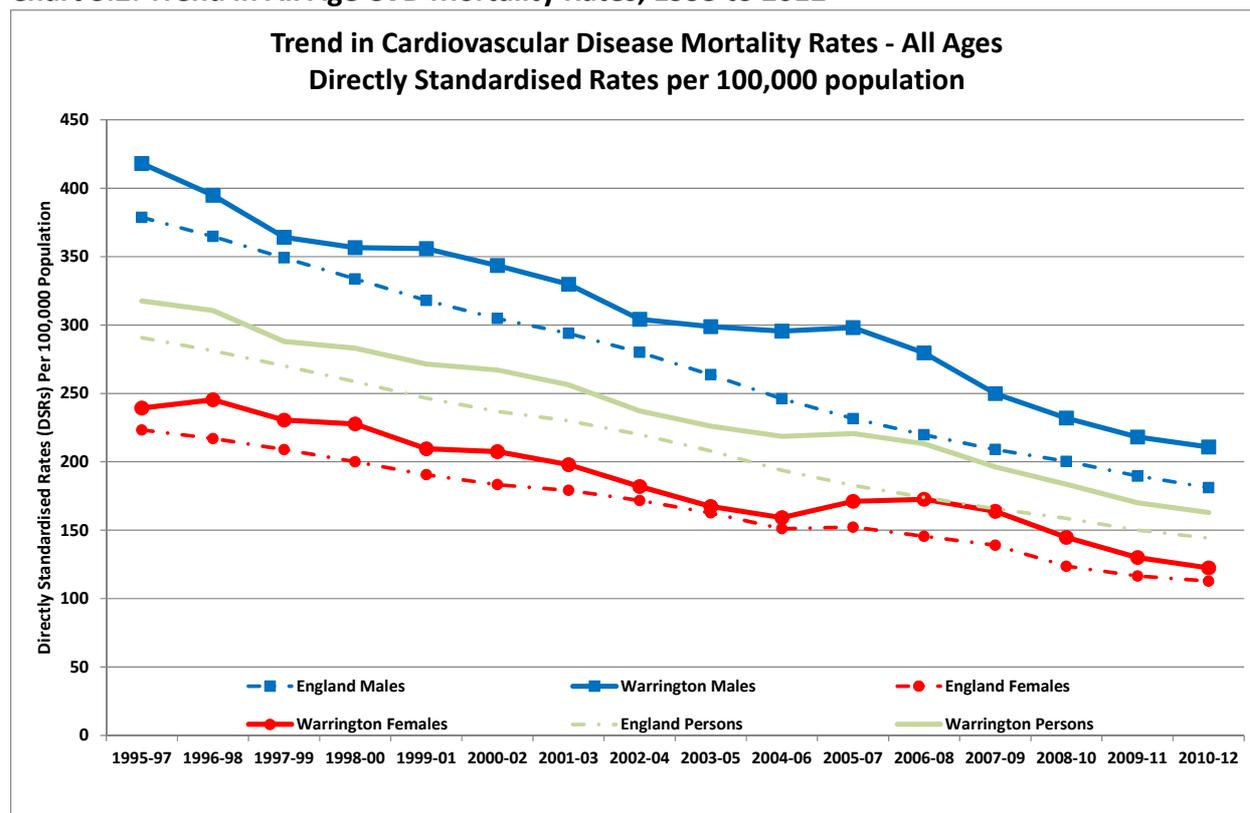
Data source: Health and Social Care Information Centre: CVD Mortality Rates[17]

Premature Mortality: CVD mortality rates for those aged under 75 years show a greater disparity with national rates. Again, although there have been substantial decreases locally, current rates are approximately **18%** above the average for England; this difference is statistically significant. Over time, as the rate of decrease locally has not kept pace with England, the inequalities gap has widened slightly.

In terms of mortality amongst those aged under 65 years, although numbers are smaller, there is an even greater gap between Warrington and England. Locally, rates have decreased by 48% compared with 51% across England as a whole, and current rates now exceed the national average by **25%**, and this difference is statistically significant.

Excess Deaths: If Warrington experienced the age and sex-specific death rates of England as a whole, there would be approximately 56 fewer deaths from CVD per year in Warrington.

Internal Inequalities: There is a strong association with socio-economic deprivation. Analysis undertaken as part of the 2011/12 JSNA Core Refresh showed that the vast majority of 'excess' deaths in Warrington occur amongst people living in those local areas that are ranked amongst the 40% most deprived in England (Quintiles 1 and 2). That analysis has been updated, as part of this work, to include deaths to 2012. This updated analysis shows the same pattern, with 42% of 'excess' all-age CVD deaths in Warrington occurring in Deprivation Quintile 1, and a further 41% in Quintile 2. The least deprived quintile in

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[17] Note: All Directly Standardised Rates included in this report have been calculated using the 1976 European Standard Population

Warrington (Quintile 5) has approximately 11 fewer deaths per year than might be expected given the age and sex profile of the areas and the average rates for England. As chart 3.3 illustrates, although there is a similar number of excess deaths per year in Quintile 1 and Quintile 2, a far higher proportion in Quintile 1 occur amongst the Under 75's.

Chart 3.3: 'Excess' CVD Deaths by Deprivation Quintile, 2010 to 2012
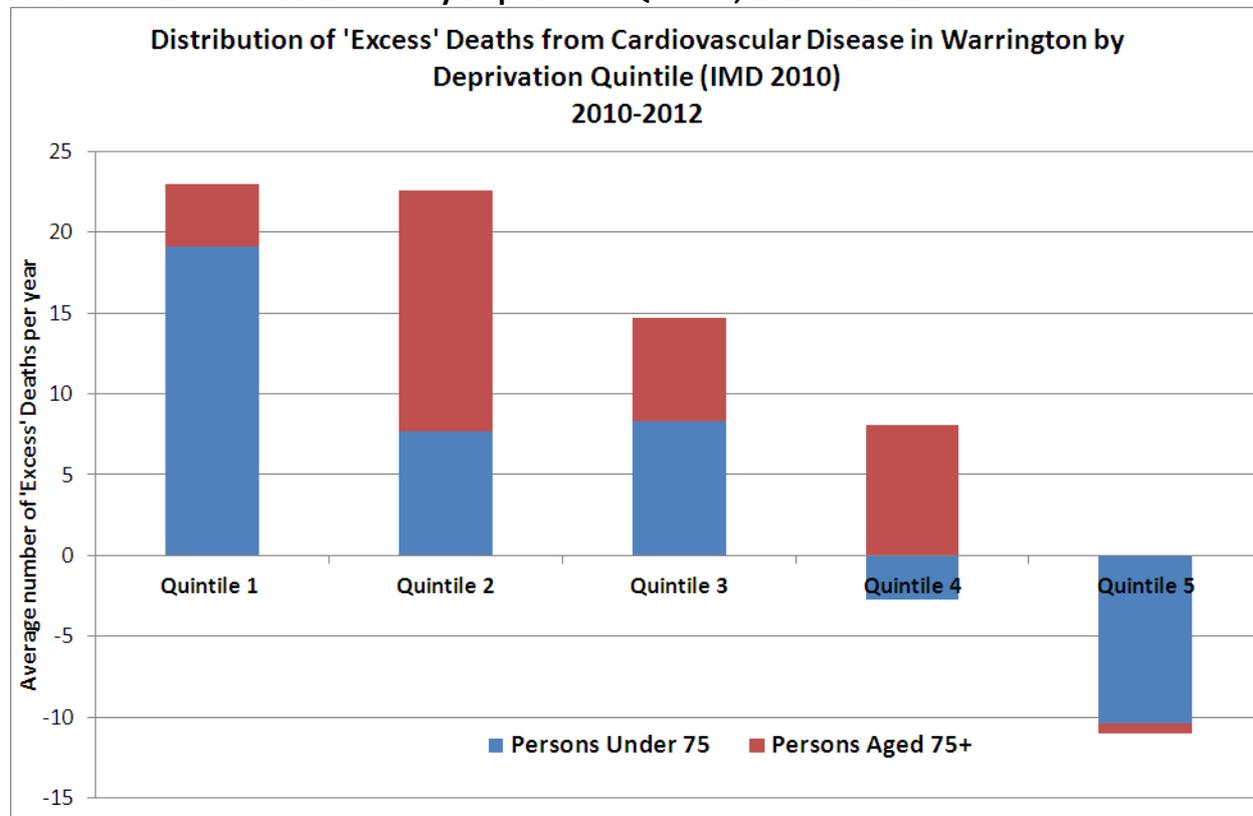
Data source: Warrington Extract Primary Care Mortality Database, 2010-2012

3.2 IHD Mortality

All Age Mortality Rates: Ischaemic Heart Disease accounts for approximately 55% of all CVD deaths in Warrington[18]. There are around 280 deaths per year from IHD specifically, amongst people of all ages. Since 2004, IHD mortality rates in Warrington have consistently exceeded the average for England by over 20%. Current all age IHD mortality rates are 22% above the average for England.

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[18] Based on 5 year average 2008-2012, after application of comparability ratios

Chart 3.4: Trend in All Age IHD Mortality Rates, 1995 to 2012
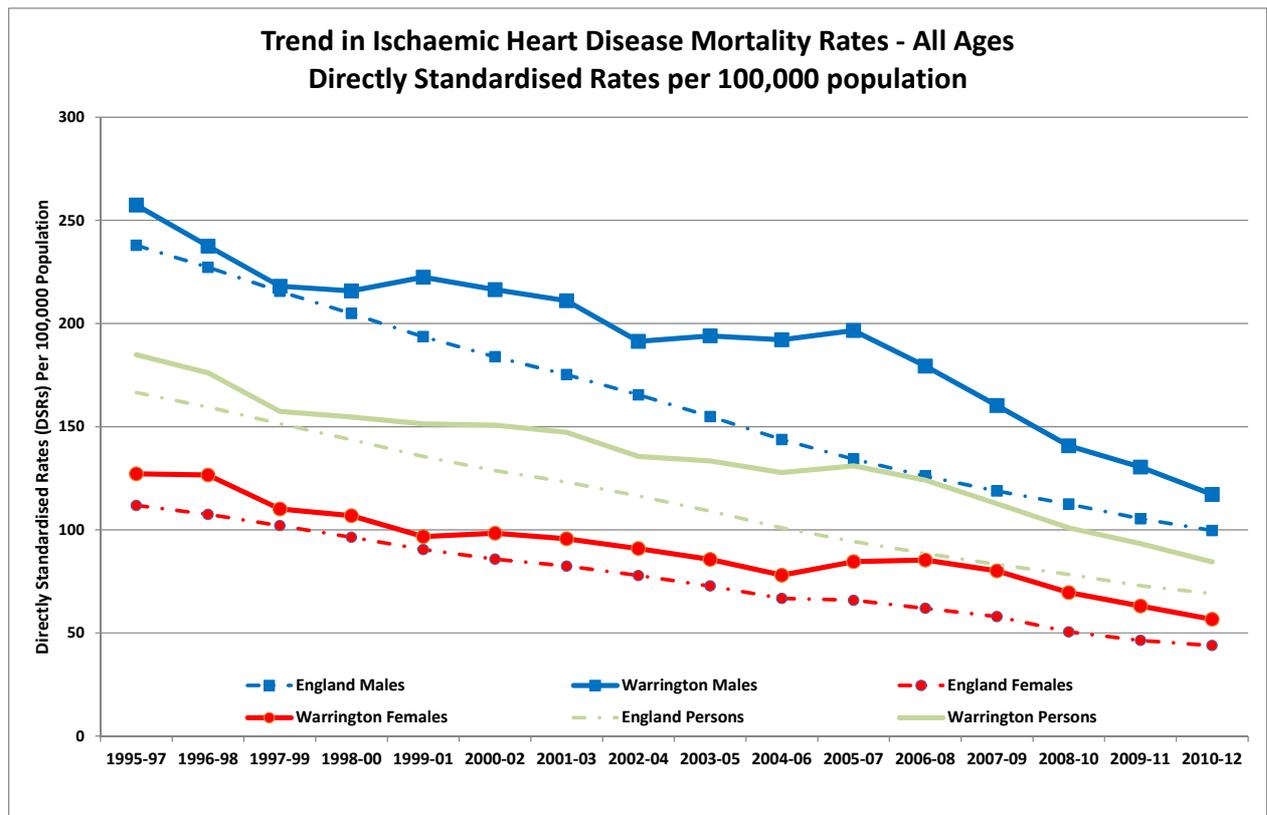
Data source: Health and Social Care Information Centre: IHD Mortality Rates[17]

Premature Mortality: The pattern is similar amongst people aged under 75 years; with rates consistently over 20% above average for England. As with overall CVD mortality, there has been a substantial reduction in rates locally (61% since 1995-97) but the rate of change has not kept pace with England. This, coupled with higher baseline rates, means that local rates are significantly higher than the average for England, and the inequalities gap between Warrington and England has widened.

Internal Inequalities by deprivation: As with all-CVD mortality, there is significant variation within Warrington. The biggest internal inequality is in rates for those aged under 75 years; the rate is 2.2 times higher in Quintile 1 compared with the rest of Warrington. Amongst the all-age population, rates are 1.6 times higher in Quintile 1 compared with the rest of Warrington. Chart 3.5 illustrates the trend in IHD mortality rates amongst the under 75's within Warrington. As the chart illustrates, rates have decreased in all Quintiles since 2001. However, the relative gap between the most and least deprived quintiles has not narrowed.

**Chart 3.5: Trend in IHD Mortality Rates amongst Under 75's, 2001 to 2012 (5 year rolling averages) Warrington Deprivation Quintiles**
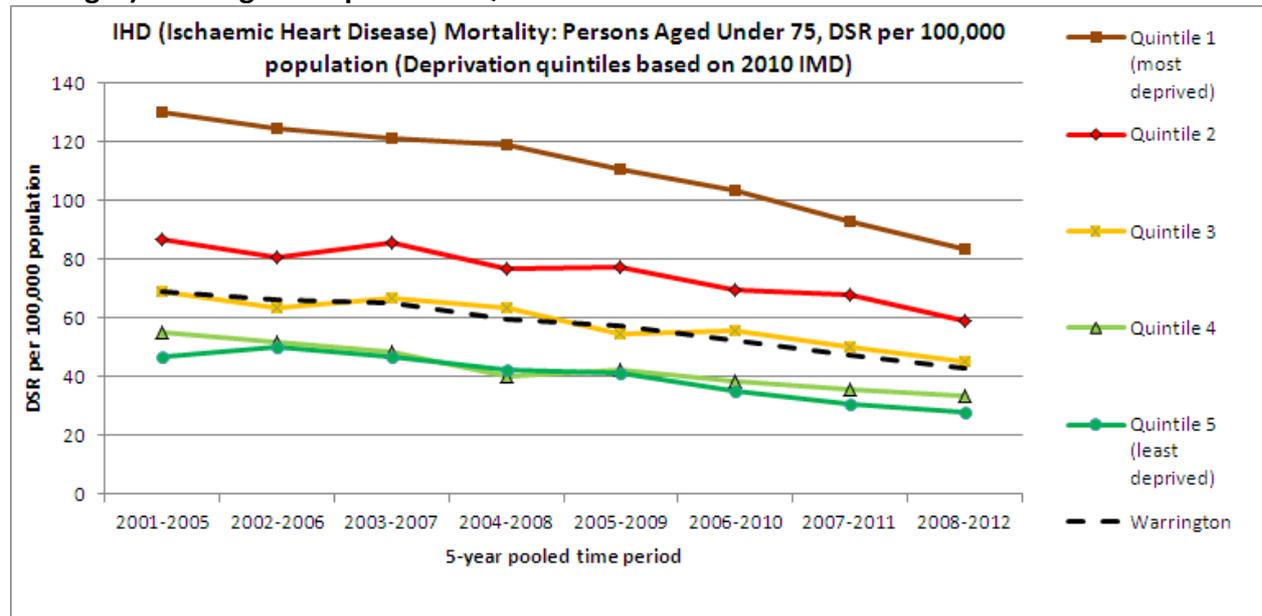
Data source: Warrington Extract Primary Care Mortality Database, 2001-2012

3.3 Stroke Mortality

Stroke accounts for approximately 25% of all CVD deaths locally, with an average of approximately 140 deaths per year. Due to the relatively smaller numbers per year, rates are more volatile, and the trend in rates and the gap with England is not smooth, as chart 3.6 illustrates. Based on current (2010-12 data), rates for Warrington are approximately 13% above the average for England.

Internal Inequalities by level of deprivation: As with IHD and CVD overall, rates within Warrington vary considerably, and in the main follow the pattern of deprivation. Rates for men in Quintile 1 are statistically significantly higher than Warrington, as is the rate for persons aged under 75[19].

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[19] Quintile SMRs for stroke are based on standard rates for Warrington. Due to small numbers per year, data for the period 2006-2012 has been aggregated

Chart 3.6: Trend in All Age Mortality from Stroke, 1995 to 2012

Trend in Stroke Mortality Rates - All Ages
Directly Standardised Rates per 100,000 population
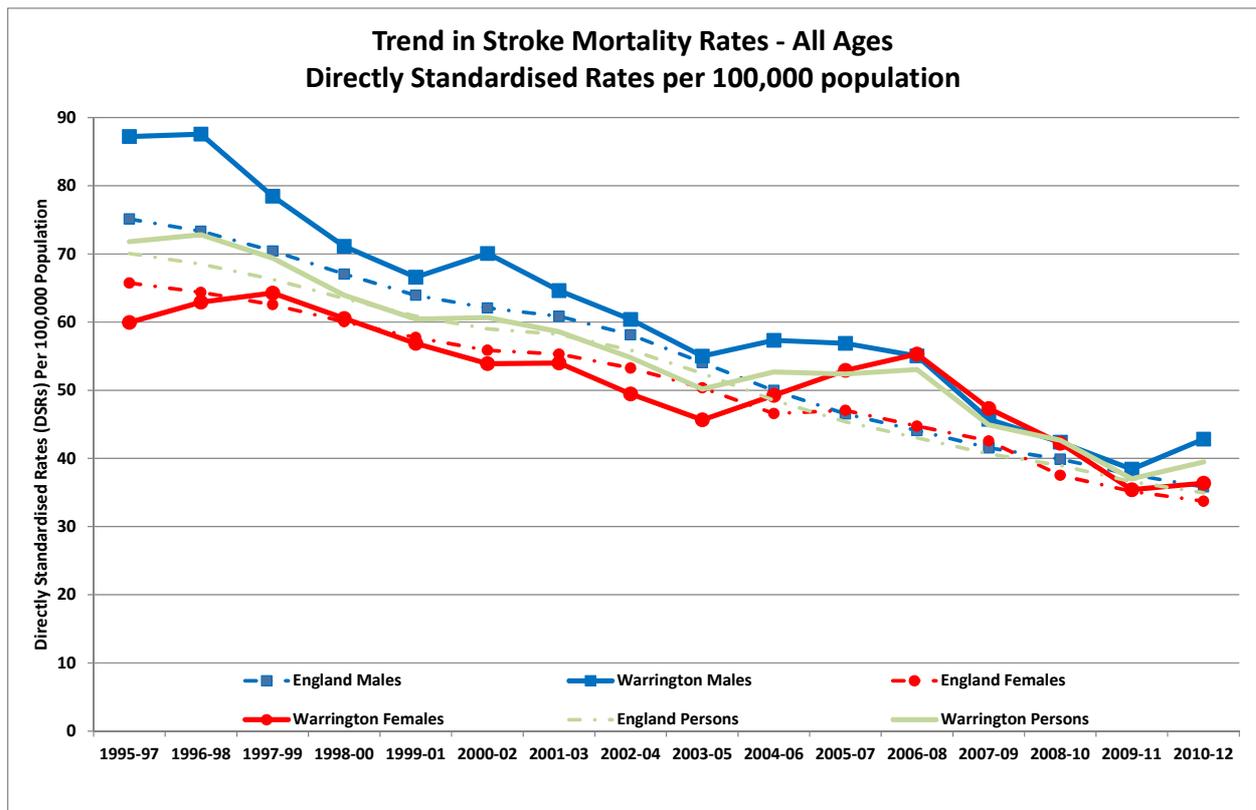
Data source: Health and Social Care Information Centre: Stroke Mortality Rates[17]

Chart 3.7: Internal Variation in Stroke Mortality: SMRs by Deprivation Quintile

Stroke Mortality: Standardised Mortality Ratios by Deprivation Quintile
(2006-2012 Standard Rates Warrington 2006-2012 Deprivation quintiles based on 2010 IMD)
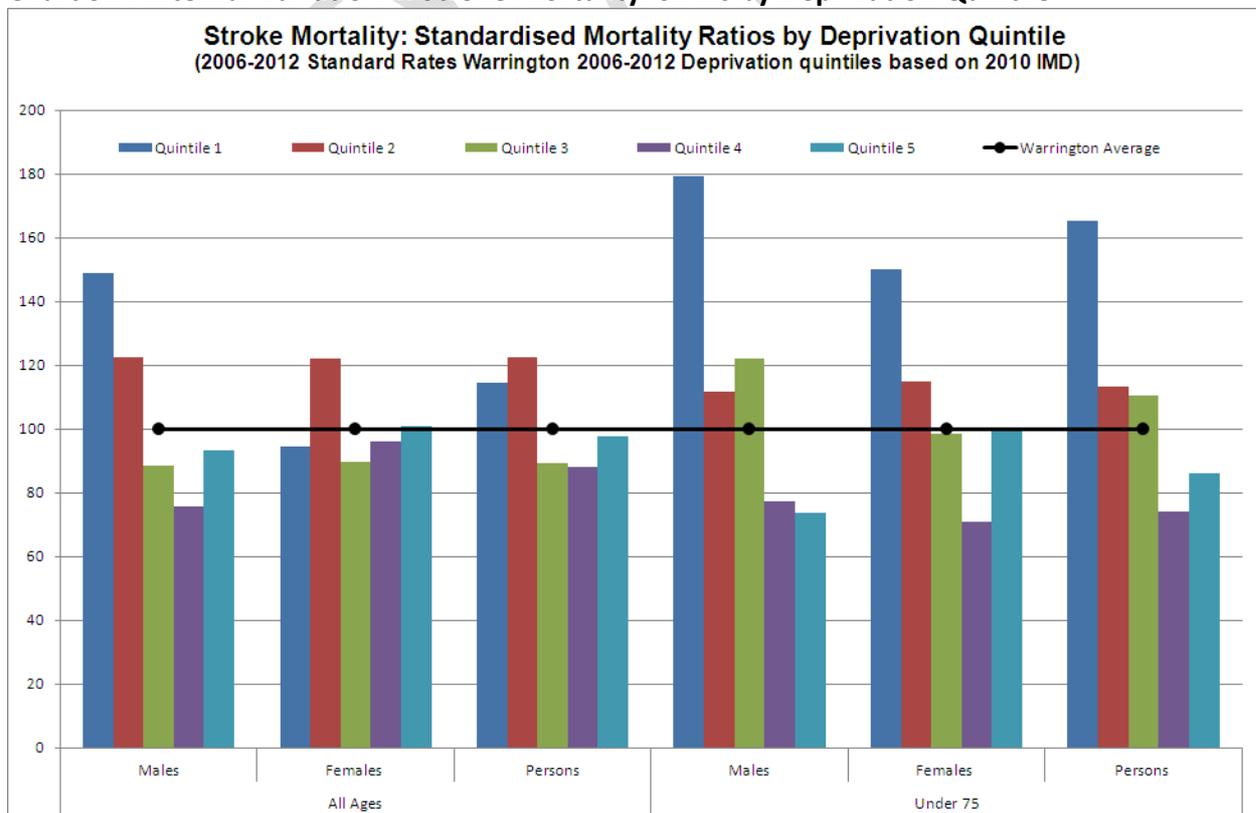
Data source: Warrington Extract Primary Care Mortality Database, 2006-2012

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3.4 Hospital Admissions

In total, there are approximately 3,500 admissions to hospital as a result of CVD per year.[20] 57% of these are admitted as an emergency.

Approximately 35% of all CVD admissions are due to IHD. This is slightly higher if only emergency admissions are considered, with 37% of all emergency CVD admissions resulting from IHD.

Emergency hospital admission rates for IHD in Warrington are significantly higher than the average for England and for Cheshire and Merseyside[21].

Within Warrington, as may be expected, emergency admission rates vary considerably; rates within Quintile 1 are 43% above the Warrington average. Amongst the under 75's the gap is wider, with rates in Quintile 1 exceeding the Warrington average by 68%.

3.5 Disease Prevalence

CHD: Based on latest QOF data[22] there are 7,882 people in Warrington known to have CHD. This equates to a prevalence rate of 3.8%; higher than the England average of 3.3%. Modelled estimates[23] however suggest that true figures may be higher, estimating that there may be around 8,500 people in total with CHD Warrington. This means there could over 600 additional people with established disease in the borough, who have yet to be diagnosed. This is in addition to those with undiagnosed CHD risk factors.

Stroke: Based on QOF data[21], prevalence of stroke in Warrington is in-keeping with that of England (1.7%). Latest figures show that there are 3,583 people in Warrington with a diagnoses of stroke recorded on their GP record. Modelled estimates suggest that these figures could be slightly higher at around 3,700.

4. CURRENT SERVICES IN RELATION TO NEED

In order to effectively address CVD, an integrated approach to prevention, treatment and management is required, with interventions needed at population, community and individual level. Effective management of CVD should include appropriate revascularisation, drug therapy and cardiac rehabilitation, and interventions should offer a multi-faceted and multi-disciplinary approach. Figure 1 presents an overview of the approach recommended by NICE.[24]

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[20] Hospital admissions data extracted from SUS data where any ICD10 code for CVD is recorded as the primary diagnosis code on admission. Data for financial years 2010/11 to 2012/13
[21] Public Health England: Cardiovascular Disease Profile 2013
[22] Health and Social Care Information Centre, Quality and Outcomes Framework (QOF) for April 2012 - March 2013, England
[23] Association of Public Health Observatories: Disease Prevalence Models
[24] NICE (2012) Commissioning Guide : Services for the Prevention of Cardiovascular Disease

There is more detailed information available describing service provision and need in a number of JSNA chapters, and programme specific strategies relating to CVD risk factors. Rather than duplicate this information, this section aims to synthesise the key points from these other documents in order to describe and assess the services in place. The section also presents an analysis of the disease management indicators available through QOF related to CVD.

Figure 1: An Integrated approach to preventing and managing CVD

High-level outcomes	**Reduction in under 75 mortality from CVD (NHS Outcomes Framework 2012/13)** **Increased healthy life expectancy (PHOFE 2013-2016)** **Reduced differences in life expectancy and healthy life expectancy between communities (PHOFE 2013-2016)**
Strategic vision and needs & assets assessment	**Health and wellbeing board**
Prioritising CVD prevention	**Directors of Public Health**

Approach

Population-wide	Community-level	Individual

Commissioner

Local authority - public health

Local authority - other than public health | Clinical commissioning

Examples of commissioned activities

Regulatory services (4.1)	Planning (4.1)	Public procurement (4.1)	Community-based services (4.1)	Assessing individuals' risk (4.2)	Behaviour change and lifestyle interventions (4.3)	Medical interventions (4.4)
Regulating opening hours, location and numbers of take-aways	Improve safety and develop environment conducive to physical activity	Specify the use of healthy diet choices, including low-salt and low-fat products	Diet and healthy eating programmes in targeted communities	NHS Health Check programme	Smoking cessation	NICE approved medical interventions to reduce risk
Illicit tobacco control	Congestion charges		Smoking cessation in targeted communities	CVD risk assessments	Dietary interventions	Medicines management and adherence
			Community-food growing	Making every contact count	Physical activity programmes	Management of CVD risk factors in people with a high risk of CVD
			Working with employers to encourage workplace wellbeing		Weight management programmes	
			Control of marketing		Alcohol services	
			Free or subsidised fruit and veg or physical activity		Generic lifestyle brief advice and interventions	
			Smoke-free homes and car programmes			
			Social marketing and health promotion			
			Improving food in care-homes and school-based settings			

PHOFE = public health outcomes framework for England 2013-2016

Source: NICE http://publications.nice.org.uk/services-for-the-prevention-of-cardiovascular-disease-cmg45

Locally, a range of different services are in place to prevent, detect and treat CVD.

4.1 Primary Prevention Programmes and Interventions

The pathway for managing CVD begins with prevention, which includes lifestyle issues such as smoking, alcohol consumption, physical activity and poor diet, leading causes of CVD death. Traditionally, the approach in Warrington has been to use predominantly a lifestyle programme approach. More recently, a more integrated approach has been developed and is to be piloted. This approach will aim to assess and support individuals with multiple lifestyle risk factors holistically, reducing the number of service specific interventions required. Change4Life and other social marketing campaigns are encouraging individuals to make simple changes to their lifestyles to improve their health. Health promotion, regulation, planning and licensing and controlling illicit tobacco are all important issues. Medical interventions to reduce blood pressure, blood lipids and to prevent blood clots are also essential. Commissioning evidence-based interventions and services for the prevention of CVD may also help prevent other non-communicable diseases including chronic obstructive pulmonary disease and some cancers.

4.1a) Smoking

Warrington Public Health team have commissioned a smoking cessation service for a number of years to provide support for smokers who wish to give up smoking. Previous analysis of smoking prevalence highlighted that the highest level of need was within Quintile 1, and differentiated targets have been set for the service in order to attempt to address the inequalities in smoking prevalence.

In Warrington, the vast majority (81%) of clients who wanted to set a quit date did so through the Stop Smoking Service. This is substantially higher than regional and national average 47% and 33% respectively.

NICE recommends that smoking cessation services should aim to see a minimum of 5% of the smoking population per year. Nationally available data[25] suggests that in 2012/13 across England as a whole, 8.4% of adult smokers (aged 16+) set a quit date. Across the North West region the comparable figure was 9.7%. The local figure is substantially lower (6.5%) as table 4.1 illustrates.

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[25] Health and Social Care Information Centre Smoking Cessation data and Integrated Household Survey estimates of smoking prevalence

Table 4.1: Trend showing numbers setting quit dates and proportion of all smokers (16+)

	IHS synthetic smoking estimates (Q4 2011/12)			Warrington Lifestyle Survey, 2013	
	England	North West	Warrington	Warrington	20% most deprived areas
Estimated smoking prevalence (%)	20.0	22.1	14.4	13.0	26.4
16+ population (Census 2011)	42,989,620	5,727,629	163,477	163,477	27,265
Estimated number of smokers	8,582,704	1,265,806	23,541	21,241	7,198
Number setting a quit date (2012/13)	724,247	123,390	1,536	1,536	456
Percentage of smokers setting a quit date	8.4%	9.7%	6.5%	7.2%	6.3%
Number who quit	373,872	58,713	1,204	1,204	360
Percentage of smokers who quit	4.4%	4.6%	5.1%	5.7%	5.0%

As the figures illustrate, both the proportion of smokers overall who set a quit date, and the proportion in the most deprived quintile who set a quit date, are lower than national and regional averages. However, success rates are better in Warrington, and thus the proportion of smokers who quit using smoking cessation services is higher locally than both regionally and nationally.

4.1b) Healthy Weight

Warrington Public Health team commission a weight management service. On average approximately 1100 people are referred to the service per year; of these around 230 complete the course[26].

Estimates suggest there may be over 87,000 adults (aged 18 and over) in Warrington either overweight or obese. Whilst there is no national guidance on numbers of patients that local weight management services need to treat, Henderson et al. (2002) found that, based on a national diet and nutrition survey, 24% of women and 10% of men were dieting to lose weight. Another survey suggested that 17% of adults might consider seeking outside help from a dietician, pharmacist or other healthcare professional in order to help them achieve their weight-loss goals. Applying these proportions to local data would equate to approximately 14,000 Warrington residents wishing to lose weight. Naturally, the vast majority of overweight people will try other methods to lose weight prior to contacting their GP or accessing publicly funded services. However, even looking

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[26] Completion defined as attending 75% or more of the programme

at just obese residents (BMI 30 and over), if 10% of men and 24% of women sought support, this would equate to over 5,200 residents, far exceeding capacity of the existing services.

4.1c) Alcohol Services

There are a range of services in place to place to support those affected by their own or someone else's alcohol misuse. Warrington Public Health commissions a free and confidential alcohol treatment and recovery service for adults in Warrington. On average, the service receives approximately 1,100 referrals per year. Approximately half of these referrals results in the client receiving treatment.

4.2 Early Detection and Effective Management of CVD Risk Factors

From prevention, the pathway for managing CVD continues with early detection. This involves high quality and timely management of identified disease, high quality and timely tertiary intervention, and good rehabilitation services. Management of CVD risk factors and disease in Primary Care is measured through various Quality and Outcomes Framework[27] (QOF) indicators. Comparative data suggests that disease management within Warrington overall is generally good. There are some areas, however, where data suggests improvements could be made.

4.2a) Detection and management of risk factors in Primary Care

Information on risk factor and disease management in Primary Care is available through the data collection system established to monitor the GP contract. A range of management indicator data is available at GP Practice level, and the percentage of relevant patients receiving specific interventions can be compared across Practices and GP Practice clusters. Information is also available on the proportion of patients who are excluded from any disease management reporting. Whilst there are valid reasons for Practices to except/exclude patients from reporting,[28] (for example, patients on a specific clinical register can be excluded from individual QOF indicators if a patient is unsuitable for treatment, is newly registered with the practice, is newly diagnosed with a condition, or in the event of informed dissent), a high exception rate could mean that fewer patients are receiving the right management intervention.

Hypertension: Across Warrington overall, 88.9% percent of hypertensive patients have a record of blood pressure (BP) in the last 9 months; this is slightly lower than the national average of 91.1%. Within Warrington, there is considerable variation at Practice level ranging from 70% to 90%, but no association with deprivation. In fact, if Practices are grouped to deprivation quintile level, those Practices serving the most deprived quintiles have higher rates of recording. The rate of exceptions across Warrington overall is higher than the average for England, (2.6% compared with 1.4%) and variation in the exception

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[27] Quality Outcomes Framework (QOF) - Incentivises GP practices to deliver high quality care, based on their level of achievement against a set of indicators.
[28] The GMS contract sets out valid exception reporting criteria

rate at Practice level is also quite considerable; from 0% to 11%. At quintile level, it is the Quintile 1 grouping of Practices that has the highest rate of exceptions.

79.8% of hypertensive patients with a BP reading recorded within the previous 9 months have a BP within the recommended range. This is in-keeping with the average for England. As with BP recording, at quintile level, it appears that Practices serving the most deprived quintiles are performing better. However, again the Warrington rate of exceptions exceeds the average for England and there is substantial variation across Practices with regard to exception rates; with Quintile 1 Practices having the highest rate of exception reporting for this indicator too.

Risk and Advice for newly diagnosed hypertensives: Across Warrington overall, 83.8% of newly diagnosed hypertensive patients had a cardiovascular risk assessment within 3 months of diagnosis; this is higher than the national average of 80%. There is considerable variation at Practice level ranging from 68% to 100%, but no strong association with deprivation; rates are lower in Quintile 1 and Quintile 4 Practice groupings. Variation in the rate of exceptions is also quite considerable; from 0% to 38%. The Quintile 1 group of practices has the highest rate of exceptions.

Diabetes: There are a range of diabetes management indicators available through QOF. Across Warrington as a whole, performance on the majority of the diabetes management indicators is in-keeping with the average for England. One area in which Warrington performs significantly worse than England is in foot examination and the recording of risk classification (DM29). Variation within Warrington is substantial, but there is no systematic pattern associated with deprivation in terms of the percentage of patients managed appropriately. However, as a whole, Quintile 1 practices appear to quite consistently have a higher exception rate for many of the indicators. As discussed above, whilst there are various reasons agreed in the GP contract to exclude certain patients from the requirement for specific management interventions, this is an area that may be worth exploring in more depth as it relates to a substantial number of patients.

4.2b) Health Checks: For effective disease management, early identification is crucial; the NHS Health Checks programme which is now underway in Warrington represents part of the picture in preventing CVD in Warrington.

The NHS Health Check Programme is included within the Public Health Outcomes Framework 2013-2016 and is a mandatory function for Local Authorities. The programme is a risk assessment and management programme, aimed at preventing or delaying the onset of various cardiovascular diseases. All adults in England between the ages of 40-74 years who have not already been diagnosed with CVD are eligible for an NHS health check every five years as part of a rolling programme. Each health check should last approximately 20 minutes and everyone who has a NHS Health Check, irrespective of their risk score should be offered lifestyle advice where appropriate and suitable referral to support them to manage and reduce their risk of developing a serious vascular condition, for example to; stop smoking services, alcohol services or local fitness services etc. Individuals who are identified as being at higher risk of vascular disease are referred to their GP for further clinical assessment and/or treatment and follow-up.

The NHS Health Check programme in Warrington originally started in 2011. However not all practices were signed up, and the programme was only fully rolled out towards the end of 2012. As at March 2014 in total 10,300 Health Checks had been undertaken since the programme commenced.

Health Checks Uptake: As at December 2013, approximately 11% of the eligible population in Warrington had had a health check. At practice level the proportion varies from 2% to 33%. Practices serving populations living in Deprivation Quintiles 2, 3 and 4 have screened the highest proportion of patients, between 15% and 16.6%. Uptake is lower in Quintile 1 (9.5%) and Quintile 5 (8.9%). Anecdotally, feedback from practices in the more affluent areas of Warrington suggests that practices are having difficulty encouraging patients to participate in the screening programme, as many receive private health checks via employers etc. The reasons for the lower uptake amongst Quintile 1 Practices are likely to be very different. Analysis of the proportion of those invited who take up the offer of screening would be very useful, but unfortunately, there are anomalies with the data recorded and it appears that practices may not be recording details of all patients they have invited for a screen.

Initial Findings

Some preliminary analysis has been undertaken on the data recorded on GP Practice computer systems following a Health Check. The analysis has highlighted that there may be some discrepancies in the recording of outcomes following a Health Check: Data extracted suggests low numbers of referrals, in addition the numbers of patients given lifestyle advice also appears lower than may be expected. It is unknown whether patients actually weren't given advice, or whether they were given advice but it wasn't recorded on the GP practice's computer system.

Data was extracted from Primary Care,[29] for all patients (7,700) who had an NHS Health Check from programme commencement to October 2013. From this, prevalence of various risk factors could be calculated:

Alcohol Risk: Of the 7,700 patients for which health check data is available, 55% had a valid Audit C[30] score. Of these, almost 35% had a score which indicated higher risk drinking. Based on the data obtained for this analysis, records suggest that less than 1% of these patients were given lifestyle advice in relation to their alcohol consumption.

Weight: Data indicated that 91% of the 7,700 patients had a valid height and weight recorded around the time of their Health Check.[31] Of these, 65% had a BMI of 25 or more (i.e. were overweight or obese). This is in-keeping with the results from the recent Health and Wellbeing Survey, in which prevalence of all overweight/obese amongst those aged 40+ was 61%. Data suggests that overall, just under 26% of people were offered advice on weight management, and just under 1% overall were referred to lifestyle services for weight management. Results follow the pattern that may be expected across the BMI categories, with a higher percentage of those who are obese being offered advice. However, the figures suggest that only just over half of all obese patients are offered

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[29] Data relates only to those Practices on the TPP system (20 of the 26 Practices in Warrington)
[30] Alcohol Use Disorders Identification Test Consumption (AUDIT C)
[31] Data was obtained when recorded within one month of the date of the health check

advice on weight management, and less than 6% are given a lifestyle referral for weight management.

Smoking: 91% of the 7,700 patients had a valid and current smoking status recorded. Of these, just under 16% were current smokers. This is higher than the recent Health and Wellbeing Survey suggest; 11.4% of those aged 40+ indicated that they currently smoked. Data on the GP system suggests that 75% of current smokers were given lifestyle advice about smoking and just under 7% were referred to the stop smoking service.

Hypertension: 96% of the 7,700 patients had a valid blood pressure recorded around the time of the Health Check. Of these, 29% of patients had a raised BP.

Cholesterol: Valid data on cholesterol was available for 81% of the 7,700 patients. Of these, 61% had raised cholesterol.

4.3 Early Detection and Effective Management of Disease

4.3a) Management of disease in Primary Care

CHD: There are a number of CHD management indicators available through QOF. Across Warrington as a whole, performance on these indicators is in-keeping with the average for England. There is variation within Warrington, but, in the main, there is no systematic pattern associated with deprivation in terms of the percentage of patients managed appropriately. For certain indicators however, rates are lower in Quintile 1: the proportion of patients with a recorded cholesterol level in the required range (CHD08), and the proportion of CHD patients on a beta-blocker (CHD10). The exception rate for CHD08 in Quintile 1 is higher than the average for Warrington. For CHD10, the rate of exceptions is lower than the Warrington average, but still exceeds 20%.

Chronic Kidney Disease (CKD): Warrington performs slightly worse than the average for England on the proportion of CKD patients who have a recent recording of blood pressure (CKD02). On all other CKD disease management indicators, performance is in-keeping with the average for England. As with other indicators, whilst there is some variation within Warrington, there is no systematic pattern associated with deprivation. Exception rates for three of the four CKD indicators are higher in Warrington than across England as a whole, and there appears to be a weak association with deprivation in relation to exception rates for CKD05 (the percentage of CKD patients with hypertension and proteinuria who are treated with an ACE Inhibitor or ARB).

Heart Failure: Performance across Warrington as a whole on all current Heart Failure indicators is in-keeping with the average for England.

4.4 Treatment in Secondary Care

In terms of treatment of disease, the local picture also appears a bit mixed. Based on routinely available data, rates of certain diagnostic and treatment procedures in Warrington are in-keeping with the national average, for others rates are slightly higher. Applying an equity audit approach, given the higher levels of need in Warrington, one

would expect diagnostic and treatment procedure rates to be correspondingly high relative to England.

4.4a) Angiography: There are around 680 angiographies undertaken in Warrington each year. The latest year for which we have comparable data for England is 2011/12; rates for England and Warrington were similar 278.2 per 100,000, 279.3 per 100,000.

4.4b) Angioplasty – Elective (planned): There are around 100 angioplasties undertaken electively in Warrington each year. The latest year for which we have comparable data for England is 2011/12; rates for Warrington were slightly higher than the England average, at 41.6 per 100,000 compared with 38.6 per 100,000. This difference is not statistically significant.

4.4b) Angioplasty – Non-elective (unplanned): On average, there are around 130 angioplasties undertaken non-electively in Warrington each year. Non-elective angioplasty rates for Warrington in 2011/12 were significantly lower than the England average; 59.4 (49.9, 70.2) per 100,000 compared with 72.4 (71.7, 73.1) per 100,000.

4.4c) CABG: On average, there are just under 80 coronary artery bypass grafts (CABG) undertaken in Warrington each year. Rates for Warrington in 2011/12 slightly exceeded the England average; 31.6 (24.9, 39.4) per 100,000 compared with 29.5 (29.1, 29.9) per 100,000, but the difference was not statistically significant.

In terms of assessing equity of access to services, 'Use to Need Ratios' are a useful measure[32]. Table 4.2 presents the procedure rates for Warrington and England, along with all-age IHD mortality rates, which has been used as the measure of need for this analysis. As the table illustrates, use to need ratios for all procedures are lower in Warrington than England[33]. There are limitations to this analysis, in that only NHS funded provision is included. However, this is the case for both the local and national data analysed, thus as there is no evidence to suggest that there is a higher proportion of patients paying for private care in Warrington compared to national, the analysis suggests that the current level of provision may not be in-keeping with levels of need.

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[32] Lowe, A and Lowe A, BMJ (2002) Importance of relative measures in policy on health inequalities.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1444836/

[33] A Use to Need Ratios of 1 indicates that service use is in-keeping with need. A ratio of less than 1 suggests unmet need, i.e. need is greater than the level of service used or accessed

Table 4.2: 'Use to Need' Analysis IHD diagnostic and treatment procedures

	England	Warrington
Ischemic Heart Disease Mortality Directly Standardised Rate (DSR) (2010-2012) All Persons, All Ages	69.0	84.3
Angiography DSR 2011/12	278.2	279.3
Angiography Use to Need Ratio	**4.03**	**3.31**
Coronary Artery Bypass Graft (CABG) DSR 2011/12	29.5	31.6
CABG Use to Need Ratio	**0.43**	**0.37**
Elective Angioplasty DSR 2011/12	38.6	41.6
Elective Angioplasty Use to Need Ratio	**0.56**	**0.49**
Non Elective Angioplasty DSR 2011/12	72.4	59.4
Non Elective Angioplasty Use to Need Ratio	**1.05**	**0.70**
Valve surgery DSR 2011/12	14.8	15.1
Valve surgery Use to Need Ratio	**0.21**	**0.18**

Internal Variation in Access to Secondary Care

Internal variation in access to diagnostic and treatment follows that pattern of deprivation, with rates substantially higher in Quintile 1 and Quintile 2. However, as with borough level figures, when compared against need, there potentially appear to be some inequity, with higher use to need ratios[34] in Quintile 5 for certain procedures, and lower ratios in Quintile 3. Care needs to be taken when interpreting these figures as the analysis is based on relatively small number of events, particularly in relation to CABG procedures.

Table 4.3: Intra Warrington 'Use to Need' Analysis IHD diagnostic and treatment procedures

Deprivation Quintile	All Angiography Use to Need	Elective Angiography Use to Need	All Angioplasty Use to Need	All CABG Use to Need
Quintile 1	1.01	1.03	1.04	1.04
Quintile 2	1.04	1.04	0.97	0.98
Quintile 3	0.78	0.78	1.06	0.65
Quintile 4	1.04	1.04	1.03	1.05
Quintile 5	1.09	1.09	0.97	1.18

4.4 Findings from the 2009 CVD Mortality Audit

A CVD mortality audit was undertaken in 2009 aimed at examining the extent to which the CVD registers for practices are validated and complete. The audit was not completed. Interim analysis based on data collected from 16 of the 29 Practices, showed that:

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[34] Ratios close to one indicate good equity of access in relation to need and a ratio close to zero indicates poorer equity

- 93% of deaths matched to Primary Care records showed the patient was on an appropriate CVD register
- The vast majority of patients had had their blood pressure and cholesterol monitored in the preceding 15 months, and these were controlled in approximately 59% and 60% of cases respectively.
- On 21% of deaths matched to Primary Care records, the patient had a recording of alcohol misuse on their record
- On 15% of records matched to Primary Care records, the patient had a recording of severe mental illness
- Of those records matched that had a recording of BMI, 68% patients were overweight or obese

Findings from the audit are unlikely to be representative across Warrington because analysis of the socio-demographic make-up of practice populations included in the audit suggests that it was the less deprived practices that were audited. The average population-weighted deprivation score for the non-audited Practices was 22.0, compared with 18.3 for Warrington and 16.0 for Practices that were included in the audit. Thus it is not possible to infer that the results obtained from the audited Practices are indicative across all Warrington Practices, and those Practices that were not included in audit may have been more likely to have a greater proportion of patients at risk of CVD.

5. PROJECTED SERVICE USE

Nationally and locally, death rates from CVD have halved since the early 1970's. However, as age is a key risk factor for CVD, and as death rates due to CVD are much higher in the oldest age-groups, and given the ageing population, then the total number of deaths is likely to increase. This, coupled with the increasing trend in some of the main CVD risk factors such as obesity, poor diet and diabetes, means that the increases may be substantial.

NHS Health Checks Potential Estimated Impact on Services and Lifestyles: The Department of Health have developed a tool[35] to provide an estimate of the health impact and economic modelling predictions for local areas. The tool identifies the potential service implications, benefits and cost savings resulting from implementing the NHS Health Check programme[36]. Within Warrington, local data from Primary Care suggests that 65,125 people are eligible for a Health Check. If 20% of the eligible population are invited for a Health Check, and assuming that 75% of those invited attend, the model estimates that in each of the first five years of implementing the NHS Health Check programme, within Warrington:

- 509 additional people will complete a weight loss programme

- 341 additional people will be taking statins

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[35] Department of Health , NHS Diabetes and Kidney Care NHS Health Check Ready Reckoner tool
[36] Assumptions inherent in the tool include: 20% of the eligible population are invited for a health check, 75% of those invited attend. The tool has been modified using local data on population size and structure, prevalence of smoking and BMI. It has not been possible to adjust the tool to utilise local data on actual uptake rates.

- 154 additional people will be compliant with an Impaired Glucose Regulation lifestyle

- 84 additional people will be diagnosed with diabetes

- 248 additional people with be taking anti-hypertensive drugs

- 200 additional people will be diagnosed with chronic kidney disease

- 152 additional people will increase levels of physical activity

- 11 additional people will quit smoking

Potential Estimated Impact on CVD Events: Evidential modelling by the Sheffield University School of Health and Related Research was undertaken for NHS Warrington[37]. It suggested that, if population-level cardiovascular risk factors could be reduced by around 3% to 4% by targeted interventions following a health check, over a period of five years acute episodes such as heart attacks, strokes, heart failure and kidney failure events could be reduced by around 244 per year at the end of the 5-year period. For Warrington, the cumulative total of events/admissions avoided during the 5 years is estimated at around 732 (assuming that 20% of the target is reached each year). Up to 30 premature deaths per year could potentially be avoided by the end of the 5-year period. The cumulative number of premature deaths avoided could potentially be around 90 (Whitfield, 2009). The model assumes that the reduction in risk is gradually achieved over 5 years, so estimates of the number of deaths avoided are 6 in year 1, 12 in year 2, 18 in year 3, 24 in year 4, and 30 in year 5, i.e. a cumulative total of 90 over the 5-year period.

6. EVIDENCE OF WHAT WORKS

6.1) Reducing the amount of time spent sitting and increasing physical activity levels: There is mounting evidence that reducing the amount of time spent sitting will improve population health. Sedentary behaviours include sitting, television-watching, and other low-energy activities. The link between sedentary behaviour and CVD morbidity and mortality is looking clearer and public health interventions to reduce the amount of sedentary behaviour in modern societies is urgently needed. Even among individuals who meet current physical activity guidelines, high levels of sedentary activity might lead to negative health outcomes.

6.2) Greater use of statins: In an update to the existing guideline on lipid modification, the National Institute for Health and Care Excellence (NICE) is proposing that the threshold be halved for offering statins to people to prevent CVD. Currently, only people with a 20 per cent or greater 10-year risk of developing CVD are offered statins. Draft guidance now recommends offering statins to people who have a 10 per cent or greater 10-year risk of developing CVD. The guidance says that GPs should estimate the level of risk among their patients using the QRISK2 assessment tool which takes into account measurements including whether the patient smokes, their cholesterol levels, blood pressure, and BMI. The calculator provides a percentage risk of developing CVD in the next 10 years. New evidence has suggested that QRISK2 is a more accurate CVD risk tool particularly among

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[37] Sheffield University School of Health and Related Research; Modelling the Impact of population level risk reduction in cardio-vascular disease

ethnic populations. Patients with type 2 diabetes should have their risk assessed using the UKPDS risk tool. A Cochrane review by Taylor, et al., (Statins for the primary prevention of CVD) concludes that statins are a cost-effective way to treat CVD, with no excess of adverse events among people without evidence of CVD.

6.3) Selenium supplementation for the primary prevention of CVD: A Cochrane review (2013) looked at the potential of selenium supplementation, as a single ingredient, for the primary prevention of CVD. It also examined the effects of selenium-only supplementation on major CVD risk factors, including blood lipids and blood pressure, as well as on potential adverse cardio-metabolic effects such as type 2 diabetes. There were some limitations to the study, but overall, it showed that there were no statistically significant effects of selenium supplementation on major CVD clinical end-points or on overall non-fatal CVD including CHD and stroke. With regard to CVD risk factors, current trial evidence suggested a potential beneficial effect of selenium supplementation on blood lipids, namely non-HDL cholesterol; for total cholesterol, HDL cholesterol, and triglycerides, the findings did not reach statistical significance. More trial evidence is needed to clarify potential benefits of selenium supplementation on blood lipids as well as potential adverse effects of selenium supplementation on development of type 2 diabetes. The draft scope states that issues that will be covered include a cardio-protective diet including stanols and sterols.

6.4) Effect of longer term modest salt reduction on blood pressure: It is already proven that a modest reduction in salt intake lowers blood pressure and thereby reduces cardiovascular risk. A Cochrane review and meta-analysis (2013) sought to determine the effects of longer term modest salt reduction on blood pressure, hormones, and lipids. It showed that a modest reduction in salt intake, as currently recommended, has a significant effect on blood pressure both in individuals with raised blood pressure and in those with normal blood pressure. This was irrespective of sex and ethnic group. The findings provide further support for interventions aimed at reducing salt intake amongst the population as a whole. This will lower blood pressure and thereby reduce strokes, heart attacks, and heart failure. The analysis showed a dose-response relation. The current recommendations to reduce salt intake to 5-6 g/day will have a major effect on blood pressure, but a further reduction to 3 g/day will have a greater effect. The authors state that 3 g/day should become the long term target for population salt intake. NICE has recommended a reduction in salt intake to 3 g/day by 2025 for the UK adult population.

6.5) General dietary interventions: Food policies that set stricter targets to bring about greater improvements in UK dietary intake of industrially produced trans-fatty acids (IPTFAs), saturated fats, salt and fruit and vegetables, resembling those achieved in some other countries, could further reduce deaths from CVD. A modelling study from the UK by O'Flaherty et al. (2012) estimated substantial potential reductions in CVD mortality if stricter nutritional policy targets for salt, fat, and fruit and vegetable intake were implemented. There were limitations to this study, for example, death was the only outcome measure, but the evidence suggests that food policies setting stricter targets to bring about greater improvements in UK dietary intake of IPTFAs, saturated fats, salt and fruit and vegetables, resembling those achieved in other countries, could further reduce deaths from CVD. This is consistent with recommendations in NICE PH25 that national policies can have beneficial effects on CVD.

6.6) Interventions for prevention of cardiovascular diseases with insufficient or conflicting evidence: There is insufficient evidence as to the advantages or disadvantages of drinking tea or coffee on CVD risk factors. There is conflicting evidence as to the effect of restricting numbers and opening hours of takeaways locally, and most of the studies in this area have been undertaken in the US or countries outside the UK. Evidence suggests that sugar-sweetened drinks may be associated with an increased risk of hypertension, but evidence that artificially sweetened drinks might also be associated with hypertension is conflicting. According to the evidence, e-learning to promote dietary behaviour change may not produce clinically significant or cost-effective changes in dietary behaviour.

6.7) Guidance for the Treatment / Secondary Prevention of CVD: There is a large body of evidence-based guidance for the treatment and management of cardiovascular diseases. The guidance below is recent material from the National Institute for Health and Care Excellence (NICE):

Guideline	Published
• Lower limb peripheral arterial disease (CG147)	2012
• The management of stable angina (CG126)	2011
• Chronic heart failure (CG108)	2010
• Prevention of cardiovascular disease (PH25)	2010
• Chest pain of recent onset (CG95)	2010
• Stroke (CG68)	2008
• Familial hypercholesterolaemia (CG71)	2008

The European Society of Cardiology published European Guidelines on cardiovascular disease prevention in clinical practice in 2012. The Scottish Intercollegiate Guidelines Network published Management of patients with stroke or TIA: assessment, investigation, immediate management and secondary prevention in 2008, Risk estimation and the prevention of cardiovascular disease in 2007 and Acute coronary syndromes also in 2007 (updated in 2013). Recent research recommendations on Cardiovascular risk in people with [chronic kidney disease] (CKD) from NICE state that evidence is needed to better determine the mechanisms leading to increased risk of CVD in people with CKD and to thus enable the CVD risk to be calculated in people with CKD.

Further NICE guidance on the family of CVD diseases is listed below:

Guideline	Published
• Chronic kidney disease (CG73)	2008
• Hyperphosphataemia in chronic kidney disease	2013
• Preventing type 2 diabetes (PH38)	2012
• Preventing type 2 diabetes (PH 35)	2011

7. SPEND – PROGRAMME BUDGETING AND COMPARATIVE ANALYSIS

Given the numerous and varied CVD risk factors and prevention and treatment interventions, it is difficult to accurately estimate the full extent of spend on CVD across Warrington.

Data on NHS allocated expenditure is available through the Programme Budgeting data that the the Department of Health collate. The programme budgeting benchmarking tool provides commissioner-level expenditure data which enables comparative analysis of spend over 23 disease-specific categories.

The methodology of assigning spend to programme budgets and care settings is constantly evolving as new methodologies to refine allocation are developed, therefore caution should be applied when comparing data over a number of years. Similarly, caution should be applied when interpreting any data between geographic areas, as guidance around the methodology for allocating spend between categories may be interpreted differently in different areas.

The latest data available is for the 2012/13 financial year. Over this period NHS Warrington spent £23,247,367 on problems relating to CVD. Per 100,000 population, this equates to approximately £1 million less than the average for England as a whole and approximately £2.3 million less than the average for areas similar to Warrington (ONS Cluster Grouping).

The total expenditure during 2012/13 was 6% less than in 2011/12 (£24,693,924). The trend in spend per head of population[38] has reduced year on year in Warrington during the time period 2010/11 to 2012/13. Spend across England as a whole also appears to be decreasing, although, spend in Warrington has reduced at a much faster rate than nationally. During 2009/10 both Warrington and England had the same spend per head of population (£138). However, by 2012/13, spend had reduced to £120 per head in Warrington compared with £130 in England. The pattern observed for Warrington and England differs for the ONS cluster, for which spend per head of population reduced in the years 2010/11 and 2011/12, but increased during 2012/13 as Chart 7.1 illustrates.

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[38] Comparative figures are weighted for population age structure and additional need over and above that accounted for by age, and the unavoidable geographical variations in the costs of providing services

Chart 7.1: Trend in Spend on Problems related to CVD per head of population
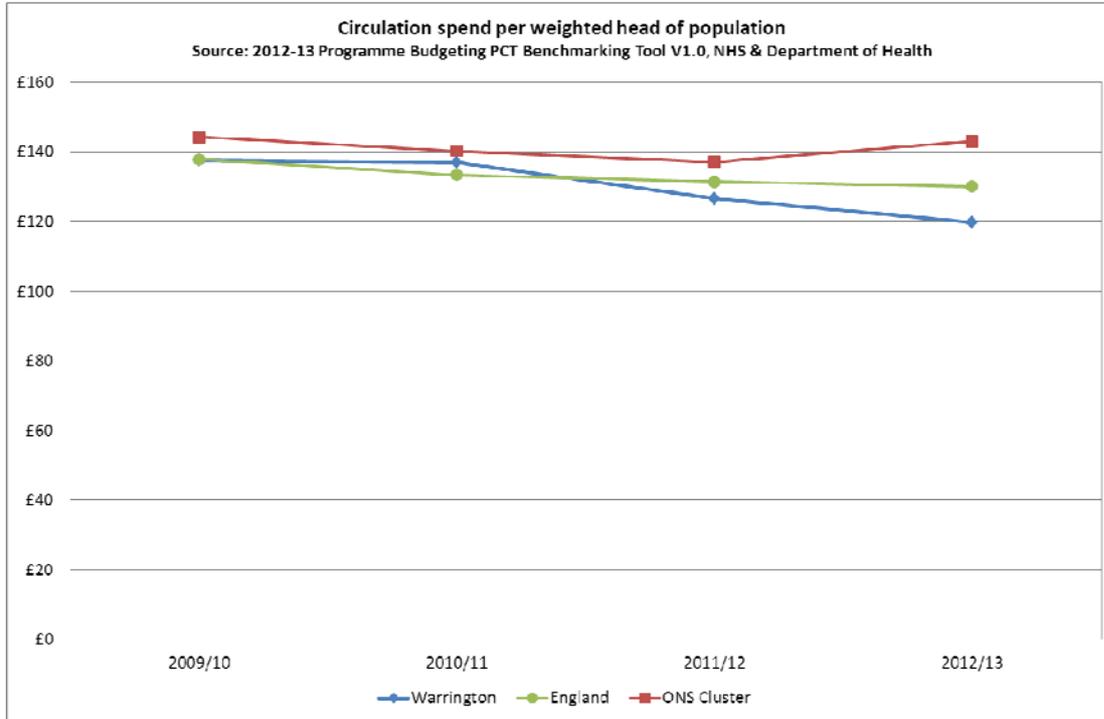
Data is available by care setting; between 2011/12 and 2012/13, there was a 24% reduction on planned and daycase inpatient expenditure, and an increase of 34% on A&E expenditure. As chart 7.2 illustrates, in 2012/13 spend in Warrington per 100,000 population was markedly lower than England and the ONS cluster across a number of care settings; inpatient (elective, daycase and non-elective), total secondary care, community care and the total expenditure. Comparative spend on primary prescribing was higher in Warrington than the average for England, but slightly lower than the ONS Cluster group average. Spend within Warrington on 'other secondary care' is also higher than England and the ONS Cluster.[39]

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[39] Activity included with this setting will include direct access services, unbundled services (excluding critical care) and secondary care services which cannot be allocated to more specific settings.

Chart 7.2: CVD Spend per 100,000 population by Care Setting

Spend per 100,000 population split across care setting compared to benchmark areas, Problems of Circulation, 2012/13
Source: 2012-13 Programme Budgeting PCT Benchmarking Tool V1.0, NHS & Department of Health
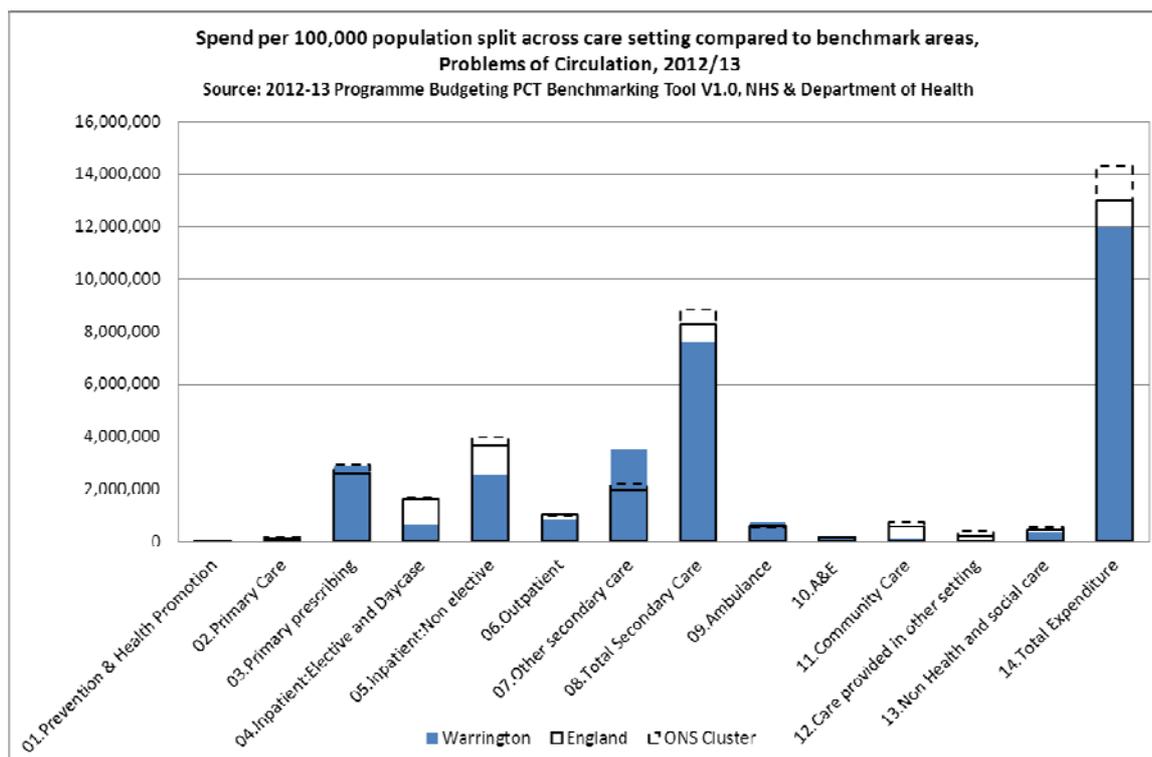
Given the higher levels of need in Warrington, as indicated by the higher rates of mortality, it might be expected that expenditure would be higher. Lower levels of spend could possibly indicate that those who had died from circulatory diseases prematurely may not have been identified as having a circulatory condition before death.

8. RECOMMENDATIONS FOR COMMISSIONING

- A comprehensive CVD strategy and action plan needs to be developed. This strategy should consider evidence-based ways to address and reduce the prevalence and impact of CVD in Warrington, in order to improve health outcomes in relation to CVD, and the resource impact of CVD.
- Continued, appropriately scaled, targeted and universal primary prevention interventions to reduce lifestyle risk factors within the population are needed:
  - o Smoking: Targeted interventions are needed to address the high prevalence amongst populations living in the most deprived areas; latest prevalence data suggests targeting the most deprived 30% would be appropriate
  - o Alcohol: Population-wide interventions and further awareness raising amongst health professionals to highlight the risk to health of regularly consuming more than the recommended alcohol units
  - o Overweight and obesity: Population-wide interventions and multi-agency work required to address both the societal and individual risk factors
- Continued roll-out of the NHS Health Check programme is needed to ensure that individuals at risk of CVD are identified as early as possible. A targeted approach is also needed to ensure that those Practices serving harder-to-reach populations are inviting and screening people appropriately

- Further work is needed with GP Practices to ensure that the correct READ codes are being used in Primary Care to record the results of the NHS Health Check
- Continued monitoring of results from the Health Checks is needed to ensure that appropriate advice and referrals are being made, and the opportunity that the health check offers is maximised
- Work to better understand the reasons for the comparatively higher rates of QOF exception reporting in Warrington would be useful to ensure that no opportunity is lost in Primary Care to reduce risk of a CVD event
- A repeat and completion of the 2008/09 Primary Care mortality audit may help identify whether patients are dying prematurely prior to having received a diagnosis of CVD. This would explain the higher death rates and the lower level of secondary care treatment and expenditure.

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