Public Health England

Protecting and improving the nation's health

State of the North East 2019:
Cardiovascular disease prevention

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SUSTAINABLE DEVELOPMENT GOALS

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Foreword

As Centre Director for Public Health England in the North East, I am very aware that cardiovascular disease (CVD) – heart disease, strokes and related conditions – is one of the biggest causes of ill health and early deaths in the North East of England. Each year over 6,700 people die from CVD across the region, which represents one quarter of all deaths. Two thousand of these people die under the age of 75 years. Many more have the quality of their lives restricted because they are unable to undertake routine daily activities without care and support.

This report shows how CVD affects people in the North East. It highlights the factors that increase the risk of having CVD and shows where in the region and among which population groups these are most common. It also describes the distribution of ill health and deaths due to CVD, showing clearly how it has a greater impact on those people living in socially and economically disadvantaged communities.

Many of the risk factors for CVD – obesity, smoking, physical inactivity, excessive alcohol consumption and poor diet – are more common in the North East region compared to England as a whole. There are a range of evidence-based services – including the NHS Health Check programme, the NHS Diabetes Prevention Programme and NHS Stop Smoking Services – that aim to identify those at high risk of future CVD and support them to adopt a healthier lifestyle. There is also a challenge to create a society and an environment where it is easier to make healthy lifestyle choices. This can be achieved by building and creating an environment where it is safer and more enjoyable to take regular physical activity, where healthy food choices are readily available in every community and where 'smokefree' is the norm.

Over the past 12 months people from a wide range of backgrounds and professions have come together at a series of events in the North East to share ideas and plan services so that we are more effective at preventing CVD. We all have an opportunity to contribute to improving the health of people in the North East and, in its recommendations, this report clearly demonstrates what different groups – individuals, local authorities, clinical commissioning groups and NHS acute and mental health Trusts – can do to prevent CVD. Communities, councillors, voluntary sector organisations, local planners, health and care workers and employers all have a role to play.

I ask you to consider this report and play your part in reducing the burden of CVD in the North East.

Professor Peter Kelly

Centre Director, Public Health England North East.

Executive summary

Since 2011, the rise in life expectancy in the North East region has slowed. A decline in the rate at which the cardiovascular disease (CVD) mortality rate is falling has been a major contributory factor. In the North East of England, CVD now accounts for 24% of all deaths. CVD is also a major burden of ill-health, accounting for 15% of all disability-adjusted life years in the region.

This report examines the current evidence about cardiovascular disease in the North East, the joint ambitions set by the National Health Service and Public Health England to address CVD, and the opportunities to reduce the burden of disease in this region by addressing modifiable risk factors.

High blood pressure. The ambition is for 80% of people with hypertension to be diagnosed, and 80% of those diagnosed to have their blood pressure controlled within a recommended range. Currently, across the North East, only around 60% are diagnosed and 60% of those diagnosed have their blood pressure controlled within the recommended range.

Cholesterol. An imbalance between the different types of cholesterol in the body increases the risk of developing CVD. Data showing the number of people with high cholesterol and the proportion that are being treated with appropriate medications will be available from NHS England within the next year. In the meantime, promotion of the NHS Health Check programme can improve diagnosis.

Obesity. It is estimated that two thirds (65%) of adults in the North East are overweight or obese compared with 62% across England. Obesity levels 10 and 11 year old children are also high in the region. Local authorities can help to address obesogenic environments through planning regulations, and prioritising active travel.

Physical inactivity. People in the UK are 20% less active now than in the 1960s. Twenty-five percent of adults in the North East don't achieve the minimum recommended levels of physical activity each week compared to 22% across England. Local authorities can maximise community assets and influence local plans to develop environments that encourage physical activity.

Diet. Around four in ten adults in the North East don't regularly consume the recommended five portions of fruit and vegetables each day. There is evidence that local authorities in the region are already using planning regulations to restrict the concentrations of fast-food takeaways where necessary.

Smoking. Sixteen percent of adults currently smoke in the North East compared to 15% across England. Smoking prevalence has fallen consistently over the past six years in

the region but remains higher than the national average. Around 7.5% of 15 year olds in the North East regularly smoke compared to 5.5% across England. Hospital trusts can provide screening, advice and referral for patients who smoke, and consider stop smoking support as part of discharge care plans.

Alcohol. Survey data suggests that 20% of adults in the North East regularly consume alcohol above the current low risk limit of 14 units a week but only one quarter of adults realise that alcohol can cause heart disease.

Air pollution – The North East has relatively low levels of air pollution but there are some exceptions. The relevant local authorities must produce action plans to show how they intend to improve air quality in the future and may consider the promotion of public transport, changing road layouts or road charges to reduce congestion.

Non-diabetic hyperglycaemia. This is condition that indicates that there is a risk of developing Type 2 diabetes and other CVD conditions and an estimated 250,000 adults in the North East have the condition. A new programme – Healthier You, the NHS Diabetes Prevention Programme – will offer people with non-diabetic hyperglycaemia personally tailored advice to improve their diet and increase their physical activity.

Diabetes. In 2017/18 there were 163,000 adults aged17 years and over in the North East (around 7%), diagnosed with type 1 or type 2 diabetes. It is estimated that another 32,000 have diabetes but are not yet diagnosed. Of those diagnosed, only around half receive all the recommended care processes that help them manage their condition.

Outcomes

The term **cardiovascular disease** includes angina, heart failure, heart attack, atrial fibrillation and stroke. The early mortality rate (under 75 years) due to CVD is twice as high in the most disadvantaged populations as it is in the least disadvantage.

In the North East, the rate of emergency hospital admissions due to **angina** is twice as high in one local authority as it is in another. Cumbria and the North East has the higest recorded prevalence of **heart failure** of all NHS regions. However, there has been good progress on reducing mortality and the all age age-standardised mortality rate due to **heart attack** in the North East is now lower than the England rate for both males and females.

There is an ambition for 85% of the expected number of people with **atrial fibrillation** (AF) to be diagnosed and for 90% of patients with the condition who are known to be at high risk of a stroke to be adequately anticoagulated by 2029. Currently the proportion diagnosed with AF among North East CCG populations varies from 77% to 85% compared to an England average of 77%. Sixty-two thousand people or 2.2% of all people in the North East are recorded on GP registers as having had a **stroke** or transient ischaemic attack (a mini stroke or TIA) compared to 1.8% across England. The proportion has been rising in recent years.

Recommendations

Individuals can:
- reduce the risk of developing cardiovascular diseases by eating well, moving more, stopping smoking and losing weight if you are overweight
- take heart protective medications as prescribed
- use the least polluting fuels in open fires or stoves to reduce air pollution

Individuals with a heart or circulatory condition can:
- regularly monitor air pollution levels where you live and work. Checking the forecast can help to reduce the time spent in places where or when there are high levels of air pollution

GP Practices can:
- undertake a systematic audit to identify people with possible undiagnosed hypertension and maximise the proportion of those diagnosed that have their blood pressure controlled to target (≤140/90 mmHg ≤79yrs, ≤150/90 ≥80yrs)
- provide alcohol Identification and Brief Advice in primary care settings
- offer people diagnosed with non-diabetic hyperglycaemia referral into the NHS Diabetes Prevention Programme
- introduce regular systematic audit to identify people at risk of an Atrial Fibrilation-related stroke who are not anticoagulated or who are sub-optimally anticoagulated

CCGs and Primary Care Networks (PCNs) can:
- encourage, support and fund initiatives to evaluate local social prescribing programmes in primary care that include the prescribing of opportunities for physical activity
- consider commissioning medicine use reviews, blood pressure self-test units and digital solutions for self-monitoring and treatment optimization

Local authorities, CCGs, Primary Care Networks (PCNs) and General Practices can:
- work together to maximise NHS Health Check programme uptake & follow up
- review data on the numbers of patients tested, known cholesterol levels and resulting treatments when it is published by NHS England from the CVDPrevent initiative (1)

Local authorities can:
- monitor the trends in levels of physical activity among the local population
- prioritise active travel in transport and development plans and deliver walking and cycling infrastructure through Local Cycling and Walking Infrastructure Plans
- use planning policies to avoid the over-concentration of hot food takeaways

- develop policies that will improve air quality such as changing road layouts at congestion and air pollution pinch points, encouraging public and private uptake of ultra low emission vehicles, using innovative retrofitting technologies and new fuels and encouraging use of public transport
- Iientify and support community assets that provide opportunities for physical activity, including access to quality green spaces
- consider the potential benefits of 'school superzones' which aim to create healthier and safer places around schools for children to live, learn and play
- work with schools to encourage healthier eating eg through provision of healthy snacks within vending machines or provision of healthier options on menus
- encourage continuing high participation rates in the National Child Measurement Programme
- commission or provide accessible activity schemes, ensuring participation from less active population groups (older people, young female adults, people with a disability, people on low incomes)
- encourage employers to develop workplace environments and policies that facilitate active travel to and from work
- support the implementation of the NHS Diabetes Prevention Programme (NHS DPP) and the development of referral pathways between the NHS Health Check programme and the NHS DPP

NHS Trusts can:
- have smokefree buildings and grounds with staff trained to facilitate smoke cessation
- provide screening, advice and referral to stop smoking services in acute and mental health secondary care settings. Ensure that the care plan at discharge of patients who smoke addresses their tobacco dependence
- implement NICE guidance PH45 "Smoking: Harm reduction"
- provide support for temporary abstinence for smokers unready to stop smoking completely or permanently
- assess all pregnant women for carbon monoxide to identify potential smoking and refer for specialist support
- establish and/or optimise alcohol care teams in district general hospitals
- provide alcohol Identification and Brief Advice in secondary care settings
- audit current practice in the management of stable angina against the recommendations in NICE Guideline CG126

1. Introduction

1.1. Context

Deaths from cardiovascular diseases (CVD) such as heart disease and stroke have a significant impact upon life expectancy. Between 2001 and 2016, declining mortality rates from CVD in England were the biggest single cause of increasing life expectancy (2). The downward trend in CVD deaths has slowed in recent years, contributing to the slowdown in increases in life expectancy (3).

CVD is also a major burden of ill-health in England, second only to all cancers (4). In the North East of England, CVD accounts for 24% of all deaths (5) and 15% of all disability adjusted life years (DALYs).

The National Health Service (NHS) and Public Health England (PHE) have identified the prevention of cardiovascular disease as a major priority (6) and produced a set of joint ambitions for the next ten years, aiming to prevent ill-health and to reduce the health inequalities associated with CVD (7).

1.2. Definition

CVD is a group of diseases and conditions which affect the heart and/or blood vessels and share a common set of causes and risk factors. It includes (8):

* atrial fibrillation (an irregular heart rate)
* coronary heart disease (angina; heart failure; heart attack)
* diabetes
* hypercholesterolemia (excess cholesterol)
* hypertension (high blood pressure)
* kidney disease
* peripheral vascular disease (affecting blood vessels)
* stroke
* vascular dementia (caused by reduced blood flow to the brain)

Some people will live with cardiovascular diseases or conditions and be unaware of them. This may be because they have not yet developed noticeable symptoms, or because they have not been diagnosed. If left untreated and uncontrolled, conditions such as hypertension may lead to more serious outcomes such as heart attack or stroke.

Increasing physical activity, improving diet, maintaining a healthy weight, stopping smoking and limiting the consumption of alcohol can all reduce the risk of CVD and improve health outcomes. Having high levels of low density lipoproteins, or low levels of high density lipoproteins in the blood, or high blood pressure pressure, can also increase the risk of CVD. All these risks are assessed when adults aged 40-74 are invited to attend the NHS Health Check programme every five years (9).

1.3. Data sources

This report draws on epidemiological data from several different sources. Age-standardised mortality rates are calculated from Office for National Statistics (ONS) death records. Some of these rates are published within the Fingertips suite of tools (10). Hospital admission rates are calculated from Hospital Episode Statistics (HES) data supplied by NHS Digital (11). Data on the prevalence of diagnosed disease is from the Quality and Outcomes Framework (QOF), published by NHS Digital (12).

Published indicators from the National Cardiovascular Intelligence Network (NCVIN) show diagnosed prevalence as a proportion of expected prevalence for Clinical Commissioning Group (CCG) and general practice populations (13).

NHS Rightcare have published Long Term Conditions Packs (14) for each CCG. This report complements the NCVIN and Rightcare packs by focusing on the risk factors, outcomes and interventions for the North East region.

Data showing the relative burden of morbidity and mortality is taken from the Global Burden of Disease study (15). The study uses modelled data to allow the direct comparison of illness in different countries and from different sources.

1.4. Scope of the report

This report focuses on the health of the population in the North East of England, specifically:
- the modifiable risk factors which can lead to CVD, including high blood pressure, smoking, high cholesterol, diabetes, inactivity, obesity, poor diet and high alcohol consumption (16)
- specific cardiovascular conditions, such as heart attack and stroke
- effective and cost-effective interventions that can prevent or minimise ill-health due to CVD

Family history, age, gender and ethnicity are also risk factors for CVD but are not considered in this report because they cannot be modified.

The report examines trends in the total number of cases (prevalence), hospital admissions and deaths due to CVD and relevant risk factors. It also considers health inequalities between the North East and England, and within the North East. The current availability and uptake of evidence-based preventative interventions is reviewed.

The intended audience for this report is: decision makers in local authorities, clinical commissioning groups and the North Cumbria and the North East Integrated Care System; public health practitioners; healthcare commissioners; clinicians; voluntary sector organisations; and interested members of the public.

2. Risk factors

2.1. Attributable risk and the relative importance of risk factors

The Global Burden of Disease (GBD) study has developed methods to systematically estimate the risks attributable to key health conditions (17). Figure 1 shows that an estimated 81% of Disability-adjusted Life Years (DALYs) due to CVD in the North East can be attributed to specific risk factors. Seventy one per cent of DALYs are the result of metabolic risk factors such high blood pressure or high body mass index. Fifty five per cent of DALYs are attributable to behavioural risks, such as diet or smoking. Similar data showing attributable risk fractions for each North East local authority population are available in the GBD results tool (18).

Figure 1: Disability-adjusted life years (DALYs) due to CVD by contributory risk factors, as a proportion of all DALYs due to CVD for the North East and England, 2017
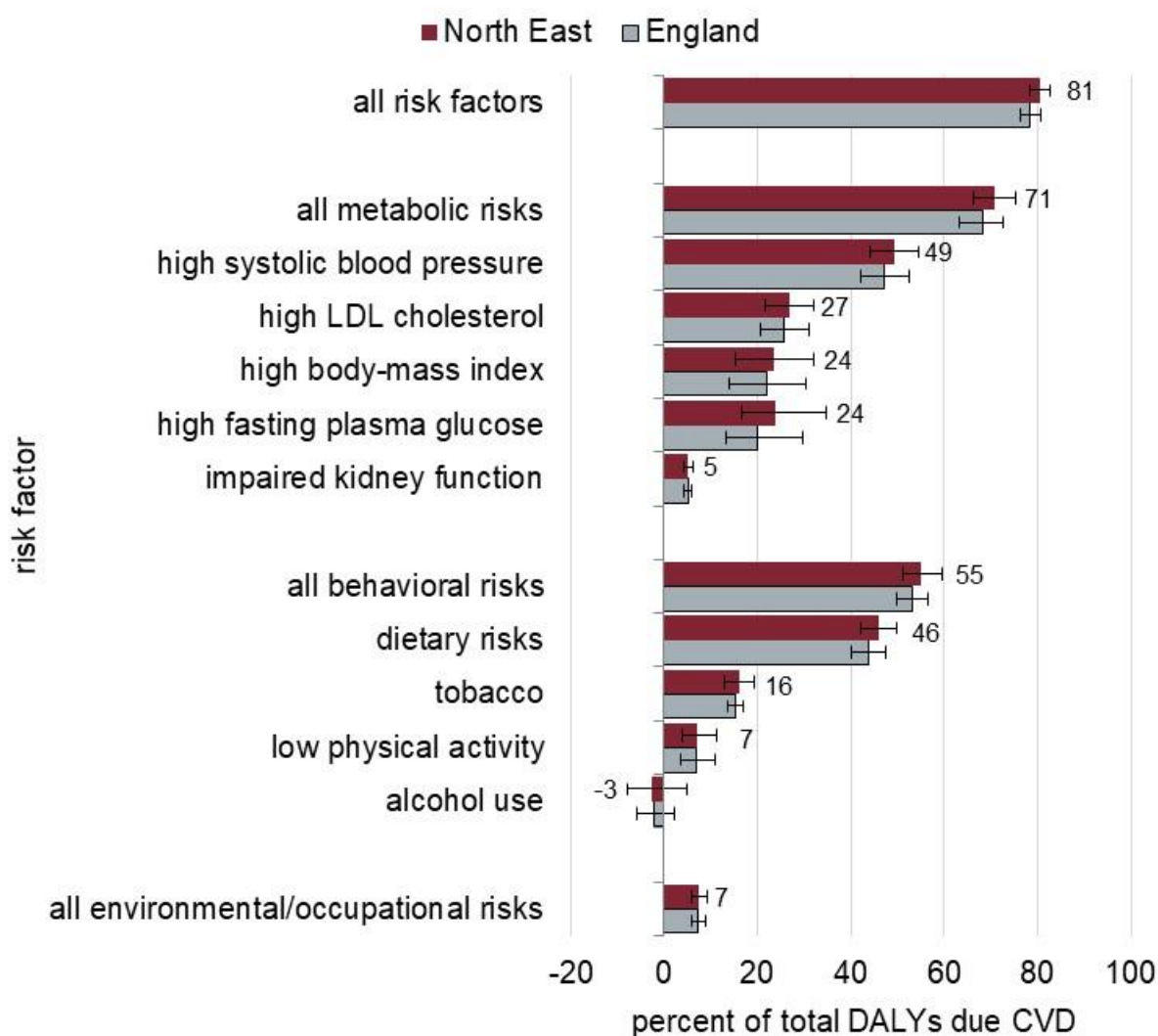
Data source: Global Burden of Disease study. Each DALY may be attributable to more than one risk factor and so proportions will add up to more than 100%. Error bars indicate uncertainty limits and represent the 25th and 975th values when results from 1,000 runs of the model are ordered.

2.2. High blood pressure

2.2.1. Description

Blood pressure measurements are recorded when the heart beats (systolic pressure) and when it rests (diastolic pressure). It is shown using systolic/diastolic mmHg readings. Blood pressure is considered normal within the range of 90/60mmHg and 120/80mmHg, and high (indicating hypertension) when readings are higher than 140/90mmHG. Levels between 120/80mmHg and 140/90mmHg may be referred to as pre-hypertension. Modifiable risk factors for hypertension are: a high amount of salt in your diet; a lack of exercise; being overweight or obese; regularly drinking large amounts of alcohol; smoking; and long-term sleep deprivation (19).

2.2.2. Ambition

Moderate to high hypertension is usually symptomless. It is estimated that over 5 million people are currently living with undiagnosed hypertension in England (20). Untreated hypertension increases the risk of a stroke and other serious conditions affecting the heart and kidneys.

PHE and NHS England, along with their partners, have set the following ambitions for 2029:
- 80% of the expected number of people with high blood pressure are diagnosed;
- 80% of the total number of people diagnosed with high blood pressure are treated to targets set by the National Institute for Health and Care Excellence (NICE) (21).

2.2.3. Evidence

PHE's CVD Prevention Packs show the observed and expected prevalence of hypertension in 2016/17, and provide estimates to meet the 2029 ambitions. The packs are available for Sustainability and Transformation Partnerships (STPs), CCGs and general practices (13). The latest information packs (currently 2016/17) can be downloaded here.

An estimated 59-62% of patients with hypertension in North East CCGs are diagnosed (Figure 2), better than the England average of 58.6%. But there is a need to identify a further 140,000 people with hypertension in order to meet the 80% diagnosis ambition the North East.

CCGs in the North East are controlling the hypertension of more of their patients than the England average (Figure 3). There are still 39.1-42.7% of patients with hypertension in North East CCGs who do not have their blood pressure appropriately controlled or for whom this is unknown.

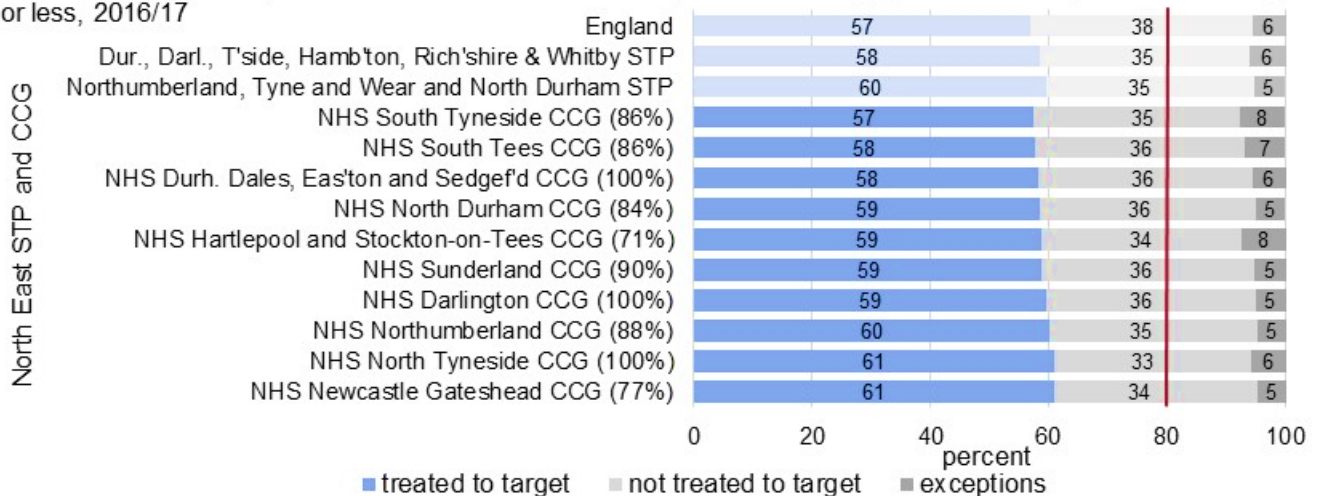**Figure 2: Prevelance of diagnosed hypertension as a proportion of expected prevalence for North East STPs and CCGs and number required to be diagnosed to meet 80% ambition**

data source: National Cardiovascular Intelligence Network, CVD Prevention Packs, August 2018
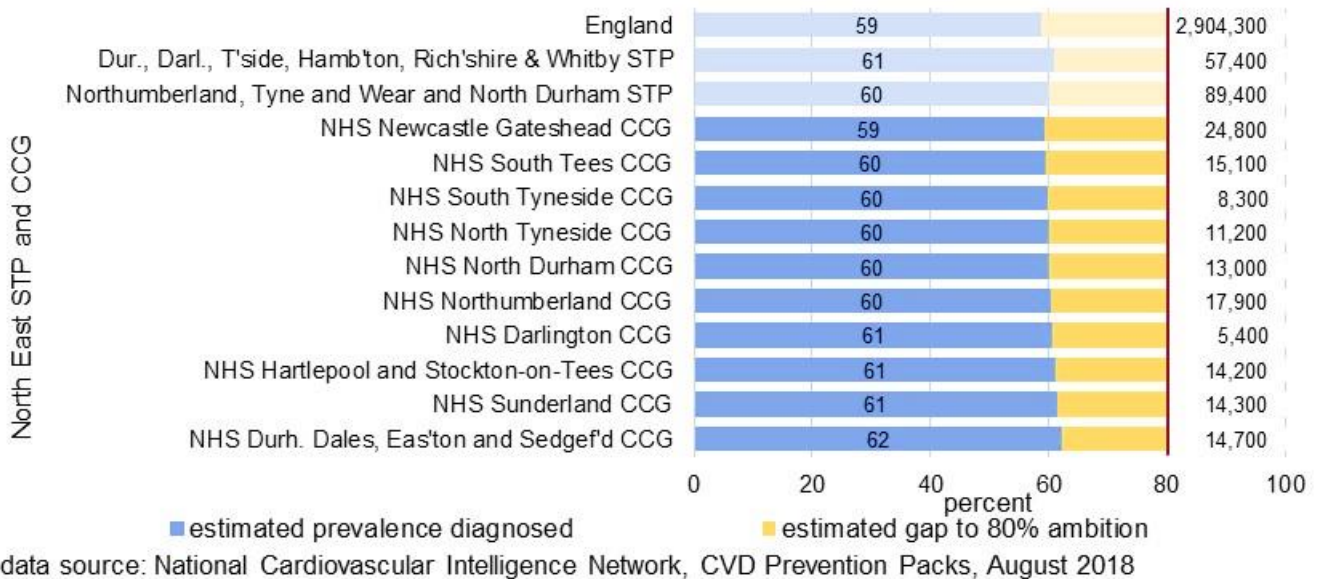
Figure 3: Proportion of people diagnosed with hypertension within treatment target for North East STPs and CCGs

data source: National Cardiovascular Intelligence Network, CVD Prevention Packs, August 2018. (%) against CCG names shows coverage i.e. proportion of GP Practices return INLIQ (indicator no longer in QOF) data.

2.2.4. Opportunities:

The The NHS RightCare CVD prevention pathway identifies a number of opportunities to improve blood pressure detection and management.

GP Practices can:
- Undertake a systematic audit to identify people with possible undiagnosed hypertension (see the CVD prevention packs)

- support people with hypertension to control their blood pressure to target (≤140/90 mmHg in people under 80, and ≤150/90 in people over 80). Note that QOF is not currently aligned with this treatment target, rewarding the less stringent control level of ≤150/90mmHg
- use practice-based pharmacists to optimise management of hypertension

Local authorities, CCGs and General Practices can:

- work to maximise NHS Health Check uptake & follow up
- tackle inequalities - people in the most deprived areas are 30% more likely to have high blood pressure than the least-deprived (22 p. 8) and hypertension is be more common in some ethnic groups, including Black African and Black Caribbean populations (22 p. 8).

CCGs and General Practices can:

- commission ambulatory blood pressure monitoring services for diagnosis, with pharmacies and general practice the most cost-effective providers (22 p. 19).
- consider commissioning:
   o Pharmacies to review medicine use to improve adherence.
   o BP self-test units, eg in surgery waiting rooms, pharmacies or leisure centres.
   o Digital solutions for self-monitoring and treatment optimisation

2.3. Cholesterol

2.3.1. Description

Cholesterol is a fat (lipid) produced by the liver which is needed by the human body to produce cell membranes, bile acids and Vitamin D. Cholesterol is also present in animal-based foods, such as dairy products and meat. Cholesterol is transported around the body in the bloodstream by lipoproteins (combinations of fat & protein). Low density lipoproteins (LDL) transport cholesterol from the liver to the tissues and high density lipoproteins (HDL) transport excess cholesterol to the liver for disposal. Both high levels of LDL and low levels of HDL in the blood are associated with an increased risk of Coronary Heart Disease (CHD). Hyperlipidemia, referred to as 'high' cholesterol, is an imbalance in the two types of cholesterol. It can be genetic (primary hyperlipidemia) or acquired (secondary hyperlipidemia). It can be controlled through exercise, diet, statins, or a combination of these factors.

2.3.2. Ambition (NHS)

For individuals:
Total cholesterol levels should be: less than or equal to 5mmol/L for healthy adults and less than or equal to 4mmol/L for those at high risk
Low-density lipoprotein levels should be less than or equal to 3mmol/L for healthy adults and less than or equal to 2mmol/L for those at high risk.
High-density lipoprotein levelhould be greater than or equal to 1mmol/L.

The ratio of total cholesterol to HDL should be below 4, to reduce the risk of heart disease (23).

For populations:

By 2029, 75% of people aged 40 to 74 should have had a formal validated CVD risk assessment and cholesterol reading recorded in the last five years and 45% of 40 to 74 year olds with a 20% or greater 10-year risk of developing CVD will be treated with statins.

25% of people with familial hypercholesterolaemia (FH) will be diagnosed and treated optimally according to the NICE FH guideline by 2024. (20)

2.3.3. Evidence:

Cholesterol readings are collected as part of the NHS Health Check programme. Data on the NHS Health Check programme offers and uptake are available for the North East and for unitary authorities (see section 4.2). Data showing the proportion of patients with poorly controlled cholesterol are not currently published. An estimated 6 in 10 adults have a raised cholesterol level (24). It is also estimated that between 1 in 250 and 1 in 500 people have familial hypercholesterolaemia, a genetic cause of raised cholesterol (20).

2.3.4. Opportunities:

Data on the numbers of patients tested, known cholesterol levels and resulting treatments is due to be published by NHS England within the next 12 months within the CVDPrevent initiative (1), allowing a review of the effectiveness of the NHS Health Check programme.

Local authorities, CCGs and General Practices can:
- maximise NHS Health Check programme uptake and follow up
- use new published data on cholesterol levels and resulting treatments to inform delivery and targeting of the NHS Health Check programme

2.4. Obesity

2.4.1. Description

Gaining weight is caused by an imbalance of calories expended and calories consumed (25). The recommended healthy and balanced diet comprises 2,000 calories per day for women, and 2,500 for men – "400 calories for breakfast, 600 calories for lunch and 600 for dinner – leaving room for a couple of healthy snacks and drinks." (26).

Figure 4: *Easy meals app,* part of PHE's *One You* campaign

Body Mass Index (BMI) measures healthy weight by dividing an adult's weight in kilograms by the square of thei height in metres. A BMI of 25 kg/m^2 or more is categorised as overweight and a BMI 30 kg/m^2 or more is classed as obese. For children, the BMI centile is used. Being overweight or obese can lead to an increase in: the amount of cholesterol in blood, high blood pressure and the risk of developing Type 2 diabetes, all risk factors for CVD. The NHS spent an estimated £6.1 billion on overweight-related ill-health in 2014 to 2015, 'greater than the amount spent on the police, the fire service and the judicial system combined.' (27)

2.4.2. Ambition

The Call to Action on Obesity (28) sets out the Government's ambitions in relation to excess weight in England.:

- a sustained downward trend in the level of excess weight in children by 2020
- revised (June 2018) to halve childhood obesity rates by 2030 and significantly reduce the health inequalities that persist (Childhood obesity: a plan for action, Chapter 2)
- a downward trend in the level of excess weight averaged across all adults by 2020

2.4.3. Evidence

Figure 5: Childhood obesity, key statistics, England 2015
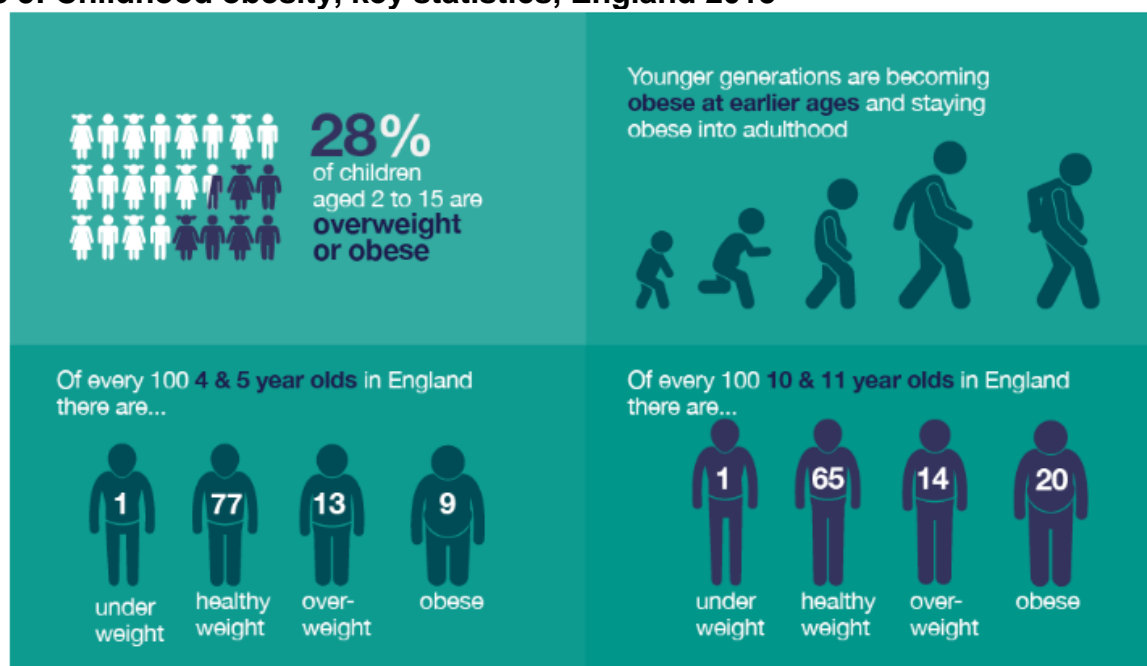
Source: Promoting healthy weight in children, young people and families: A resource to support local authorities (based on Health Survey for England 2015 Children's body mass index, overweight and obesity)

Between 2006/7 and 2017/18, the prevalence of obesity in Reception year children in England decreased slightly, from 9.9% to 9.5%, but it increased from 17.5% to 20.1% in Year 6 children. (29) (Figure 5). Obesity rates are highest in the most deprived areas (30 pp. 9-14), amongst those with a learning disability (31), and among Black African and Bangladeshi populations (30 pp. 15-20). The prevalence of obesity among children is highest in the North East, West

Midlands and London (29). Nine out of twelve North East local authorities have a prevalence of obesity among Year 6 children significantly higher than the England average (Figure 7).

Figure 6: Trends in prevalence of obesity, North East and England, children 10-11 years

Year 6: Prevalence of obesity (including severe obesity) – North East region

Source: PHE (2019) Fingertips at https://fingertips.phe.org.uk
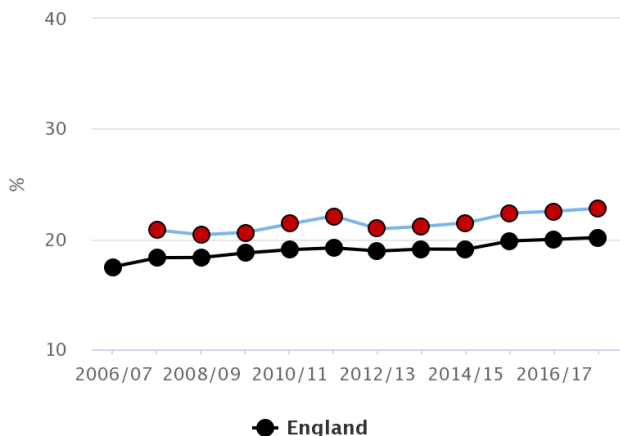
In the North East in 2017/18, around 3,100 Reception year children and around 6,300 Year 6 children were recorded as obese. If the obesity rates in the North East were the same as for England, approximately 400 fewer children in Reception year, and 740 fewer in Year 6 would be obese.

It is estimated that 62% of the adult population in England were classified as overweight or obese in 2017/18. In the North East, this percentage was 67% , the highest of all English regions. Within the North East, the prevalence of overweight and obesity in local authorities varies from 62% to 72% of adults (Figure 8).

Figure 7: Year 6 Prevalence of overweight (including obese), 2017/18
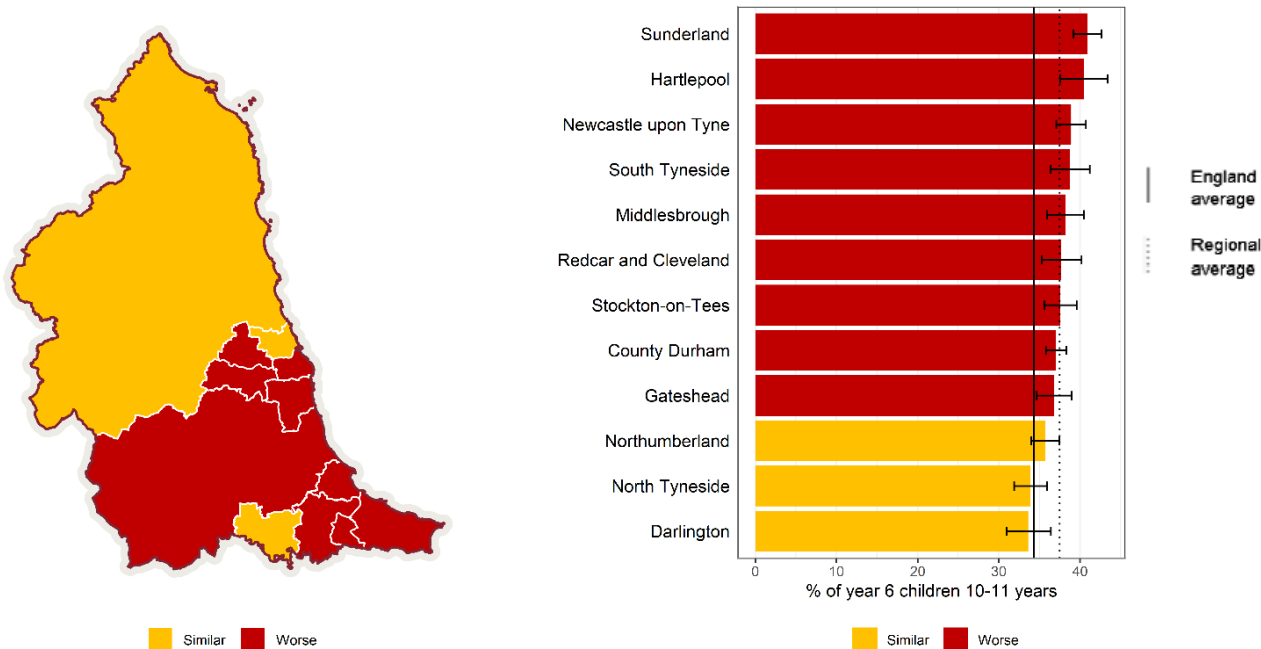
Data source: Public Health Outcomes Framework tool, PHE

Figure 8: Prevalence of adult excess weight by North East local authority, 2017/18
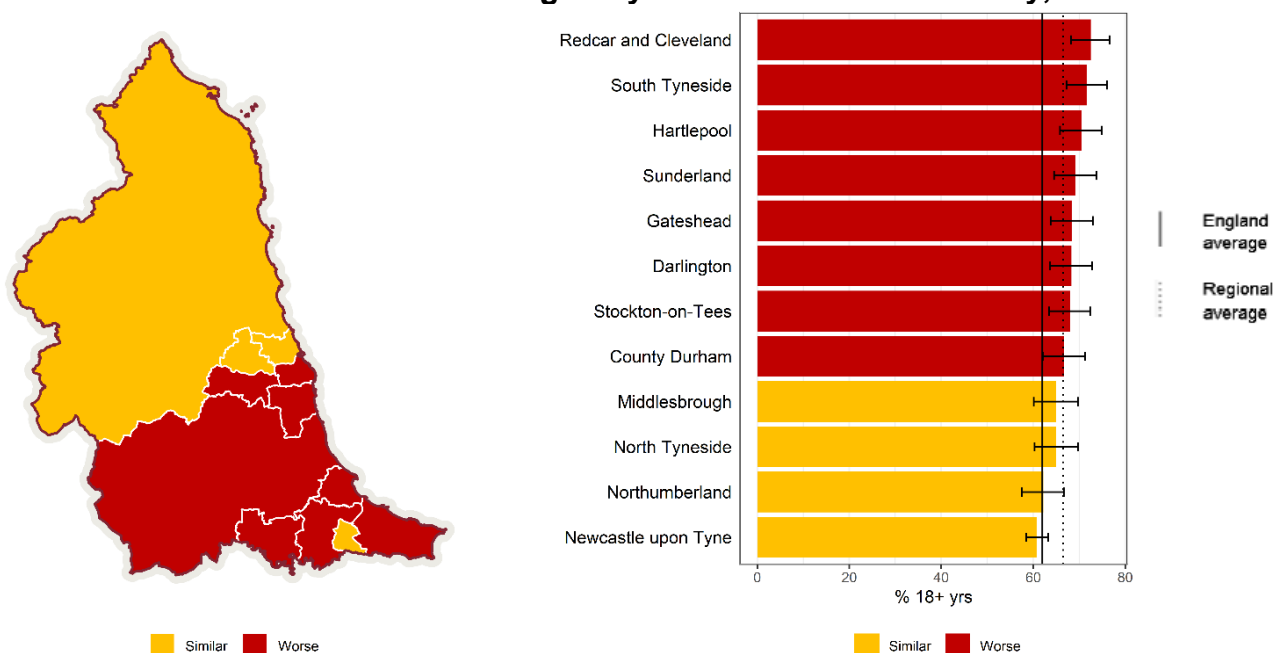
Data source: Public Health Outcomes Framework tool, PHE based on data published by NHS Digital

2.4.4. Opportunities

Local authorities can:
- prioritise active travel in transport plans and Local Cycling and Walking Infrastructure Plans (32 p. 24)
- ensure access to quality green space to promote physical activity (32 p. 24)
- partner with leisure facilities to offer accessible physical activity opportunities (32 p. 24)
- consider the potential benefits of 'school superzones', which aim to create healthier and safer places around schools for children to live, learn and play (33).
- Continue to ensure good participation in the National Child Measurement Programme - in 2017/18, 8 out of 12 North East authorities had rates of 95% or more (29)

2.5.   Physical inactivity

2.5.1. Description

In 2011 the Chief Medical Officers from the four home countries of the United Kingdom published the 'Start Active, Stay Active' report (34). The report provides evidence that physical activity can help us to achieve happier andy healthier lives, reducing the risk of developing coronary heart disease, stroke and type 2 diabetes. The report provides age-dependent guidelines on the recommended levels of activity to confer substantial health benefits, which can can be adjusted for people with disabilities according to exercise capacity and any risk issues.

Health Matters: getting everybody active every day (35) notes that increasing physical activity can reduce the risk of cardiovascular disease by 35%. .

2.5.2. Ambition

Children and young people should engage in moderate to vigorous intensity physical activity for at least 60 minutes every day. Vigorous intensity activities, including those that strengthen muscle and bone, should be incorporated at least three days a week (36).
All adults should aim to be active daily. Over a week, activity should add up to at least 150 minutes of moderate intensity activity in bouts of 10 minutes or more (37) (38).

2.5.3. Evidence:

People in the UK are around 20% less active now than in the 1960s and, if current trends continue, we will be 35% less active by 2030 (45). One quarter of adults 19 years and over in the North East don't routinely meet the minimum recommended weekly activity level of 150 minutes of moderate intensity physical activity (Figure 9), significantly higher than the average of 22% for England. Across the North East, an additional 65,000 adults would need to meet the recommended weekly level of activity to close the gap with England.

Figure 9: Percentage of physically inactive adults, 2017/18
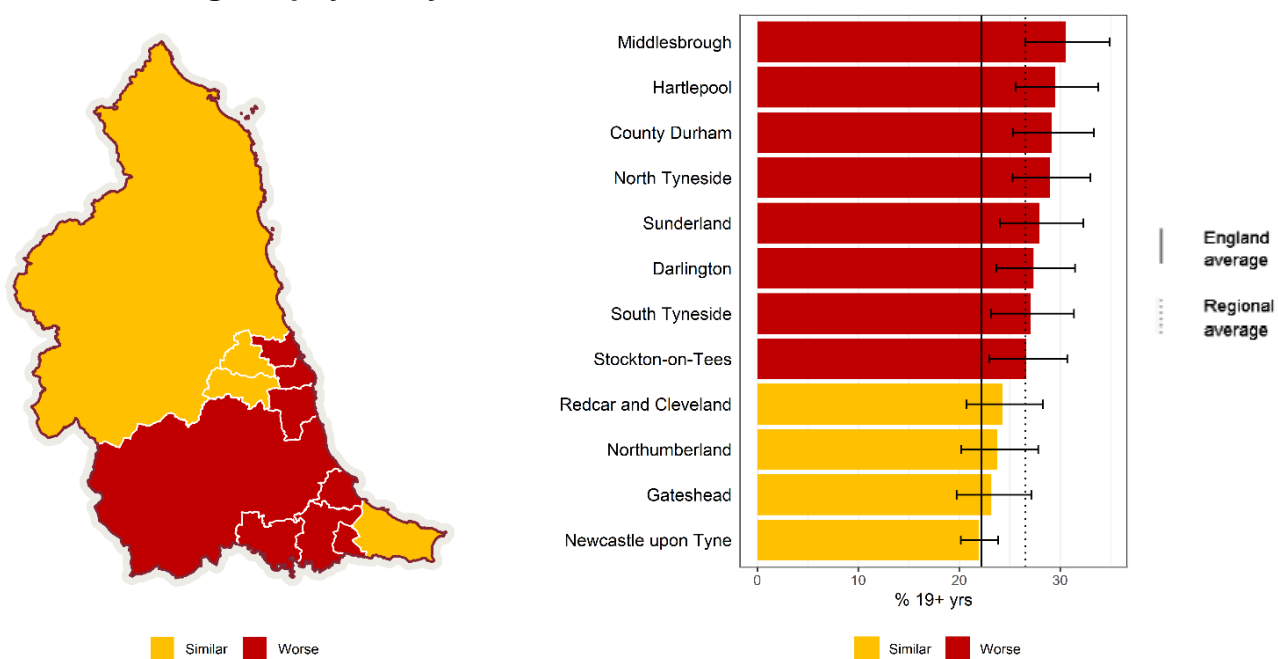
Data source: Public Health Outcomes Framework tool, PHE, based on the Active Lives survey, Sport England

2.5.4. Opportunities

PHE's national physical activity framework, Everybody active, every day (39), identifies four areas for local and national action:

- active society: creating a social movement
- moving professionals: activating networks of expertise
- active environments: creating the right spaces
- moving at scale: scaling up interventions that make us active

An update 'Everybody Active, Every Day: Two years on' was published in 2017 (40)

People are more likely to be active if it is seen as 'normal', if their friends and peers are also active or if advised to be by a GP or nurse.

Local authorities can:
- maximise community assets that provide opportunities for people to be physically active
- commission sports and leisure facilities, monitor access for populations that are less active eg older people, young females and people with a disability (41)
- improve or add green spaces and tree cover
- influence the Local Development Plans and Transport Plans to develop physical environments that encourage people to incorporate activity into their daily routines
- encourage employers to develop workplace environments and policies that facilitate active travel to and from work
- re-allocate road space to support walking and cycling
- restrict motor vehicle access, introduce road-user charging and traffic-calming schemes
- create safe routes to schools

CCGs and Primary Care Networks (PCNs) can:
- evaluate local prescribing of opportunities for physical activity (42)

2.6. Diet

2.6.1. Description

The Global Burden of Disease study (18) identifies that dietary risks contributed to 46% of all CVD disability-adjusted life years in the North East (a measure of morbidity and mortality due to CVD). There is strong evidence that consumption of fruit and vegetables, fish and fish oils and low to moderate alcohol intake will reduce the risk of CVD. Evidence also demonstrates an increased risk of CVD from diets high in saturated fats, salt and alcohol (43 p. 81).

Supporting people to adopt a healthier diet must go beyond advice on healthy foods, recipes and cooking skills. PHE's publication, Health Matters: obesity and the food environment (44), identifies where Local Authorities can help organisations offer healthier food and drink.

2.6.2. Ambition

People should follow a diet that resembles the Eatwell Guide (45) and consume an average of at least five portions of fruit and vegetables each day. (Figure 10)

Local authorities work with other stakeholders to further increase the opportunities for communities to access healthier food , both managing new business applications and working with existing food outlets to provide healthier food. (46) (47) (48)

Figure 10: The Eatwell guide
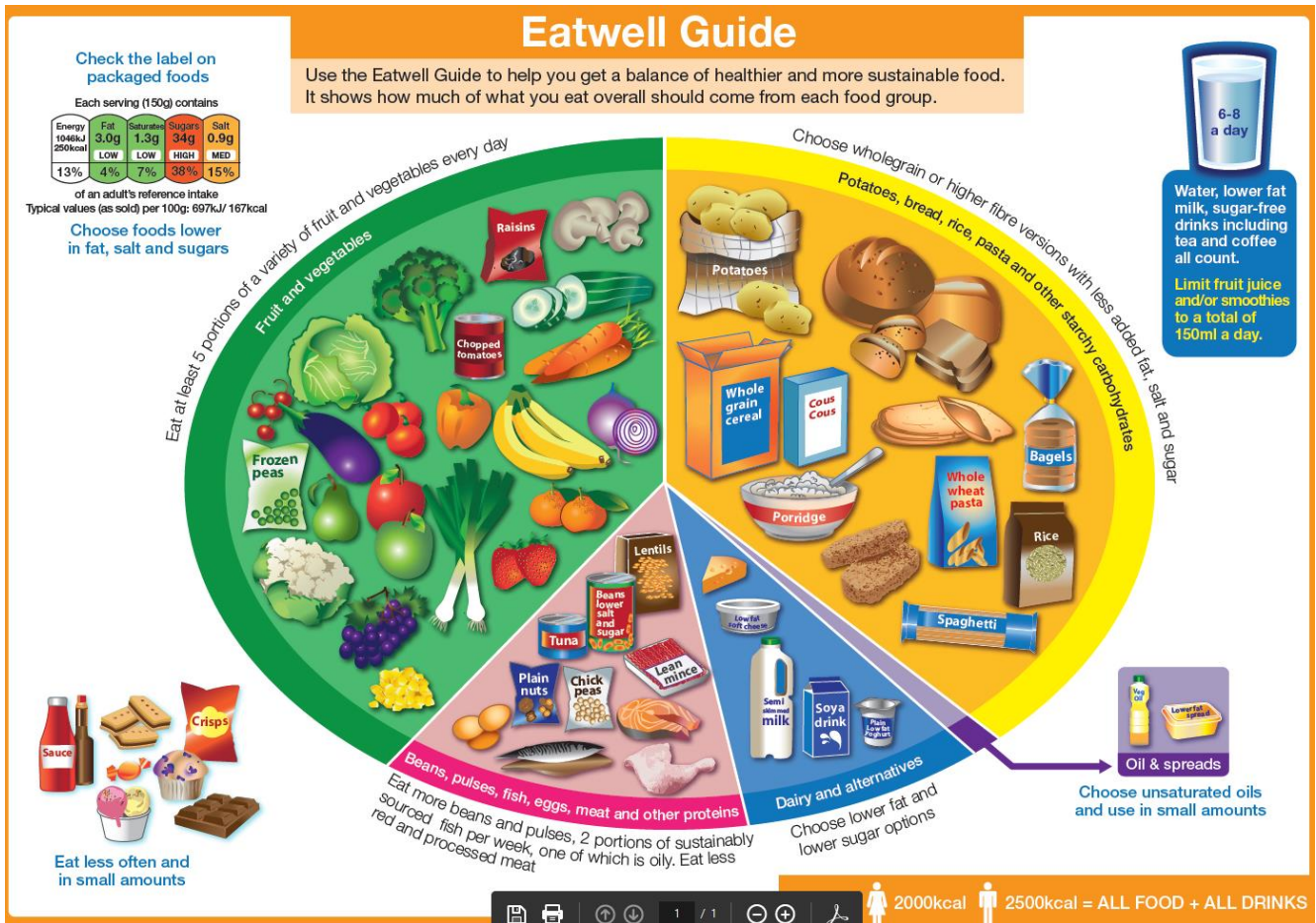
Source: PHE in association with the Welsh Government, Food Standards Scotland, and the Food Standards Agency in Northern Ireland

2.6.3. Evidence

Survey data suggests that 4 out of 10 adults in the North East don't currently eat the recommended five or more portions of fruit and vegetables on a 'usual day' (49), similar to the population of England as a whole. There is little significant variation in the proportion consuming '5 a day' between North East local authority populations (Figure 11).

Figure 11: Proportion of adults consuming five portions of fruit and vegetables on a 'usual day', 2017/18
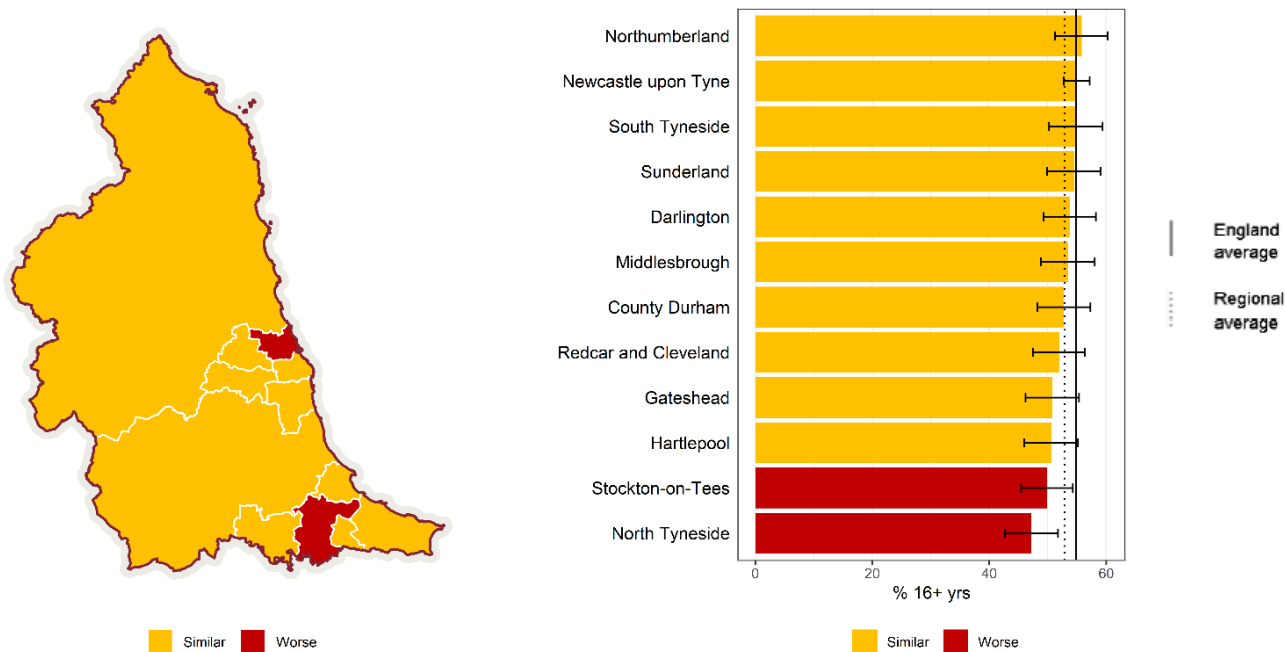
Data source: Active Lives survey, Sport England, in Public Health Outcomes Framework profile, indicator 2.11i

Figure 12: Density of fast food outlets, 2017
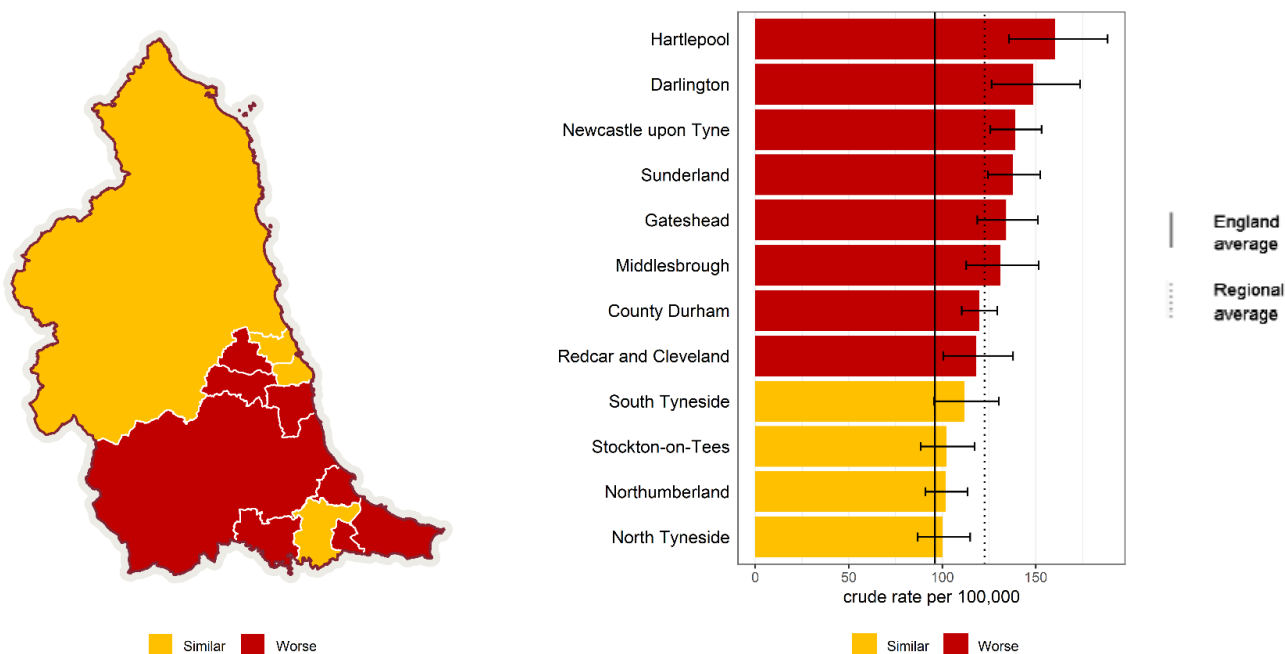
Data sources: indicator data from GOV.UK published by PHE, based on number of fast food outlets from Food Hygiene Rating System, Food Standards Agency and population from ONS mid-year population estimates

PHE estimated that, in 2017, there were over 50,000 fast food and takeaway outlets, fast food delivery services, and fish and chip shops in England (50). The density of outlets (measured as a crude rate per 100,000 population) was significantly higher in the North East, and in eight out of twelve of the region's local authorities (Figure 12), compared to England as a whole.

In Gateshead, a Supplementary Planning Document, supported by an integrated public health policy, has been used successfully to control the proliferation of takeaways in areas with high levels of child obesity. A case study can be found at https://www.gov.uk/government/case-studies/planning-document-to-limit-the-proliferation-of-takeaways.

2.6.4. Opportunities

Local authorities can work with other stakeholders to:
- use planning policies to tackle obesity egby avoiding the over-concentration of hot food takeaways in existing town centres or high streets, and restricts their proximity to schools
- work with schools to encourage healthier eating eg through provision of healthy snacks within vending machines or provision of healthier options on menus

2.7. Smoking

2.7.1. Description

Across England, it is estimated that 16% of all deaths in 2016 and 4% of all hospital admissions in 2016/17 were attributable to smoking (51). Despite the known risks of smoking and its association with cardiovascular disease, almost 6.5 million adults (14.9% of adults) in England in 2017 were estimated to be smokers (Annual Population Survey). In the North East in 2017, the proportion was higher at 16.2% of the adult population - 340,000 smokers. The rate of smoking-attributable hospital admissions in 2017/18 amongst people aged 35 or over was 45% higher in the North East (2,221 per 100,000) than in England as a whole (1,530) (Figure 18).

2.7.2. Ambition

The objectives of the tobacco control plan (52) are, by 2022, to:
- reduce the number of 15 year olds who regularly smoke from 8% to 3% or less (Figure 17)
- reduce smoking among adults in England from 15.5% to 12% or less (in 2017 this was estimated to be 14.9%)
- reduce the inequality gap in smoking prevalence, between those in routine and manual occupations and the general population
- reduce the prevalence of smoking in pregnancy from 10.5% to 6% or less

2.7.3. Evidence

The proportion of adults that are current smokers has fallen consistently in the North East over the past six years, but prevalence is still significantly higher than for England as a whole. At its widest, the absolute prevalence gap was 2.7% in 2012. By 2018, the gap between England and the North East was 1.6%. Relative to the England average, prevalence in the North East was 14% higher in 2012 and was 11% higher in 2018 (Figure 13).

Figure 13: Smoking prevalence among adults, current smokers, North East and England
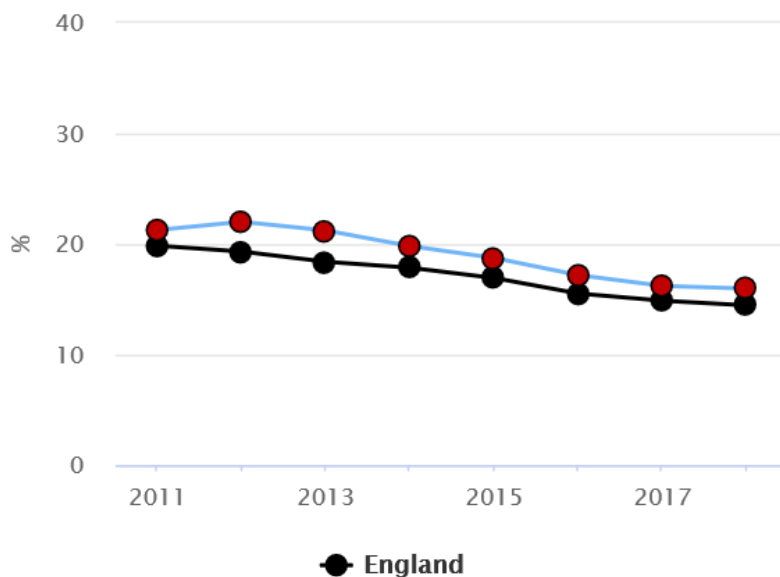
Recent trend: –

Period		North East region				England
		Count	Value	Lower CI	Upper CI	
2011	●	439,853	21.3%	20.3%	22.2%	19.8%
2012	●	456,620	22.0%	21.1%	22.9%	19.3%
2013	●	442,802	21.2%	20.3%	22.1%	18.4%
2014	●	414,673	19.8%	19.0%	20.7%	17.8%
2015	●	393,432	18.7%	17.9%	19.6%	16.9%
2016	●	362,570	17.2%	16.3%	18.1%	15.5%
2017	●	342,447	16.2%	15.4%	17.0%	14.9%
2018	●	337,973	16.0%	15.2%	16.8%	14.4%

Source: Annual Population Survey (APS)

Source: PHE, Public Health Outcomes Framework, indicator 2.14, data from Annual Population Survey, ONS

Figure 14 Smoking prevalence in adults 18+ - current smokers, 2018
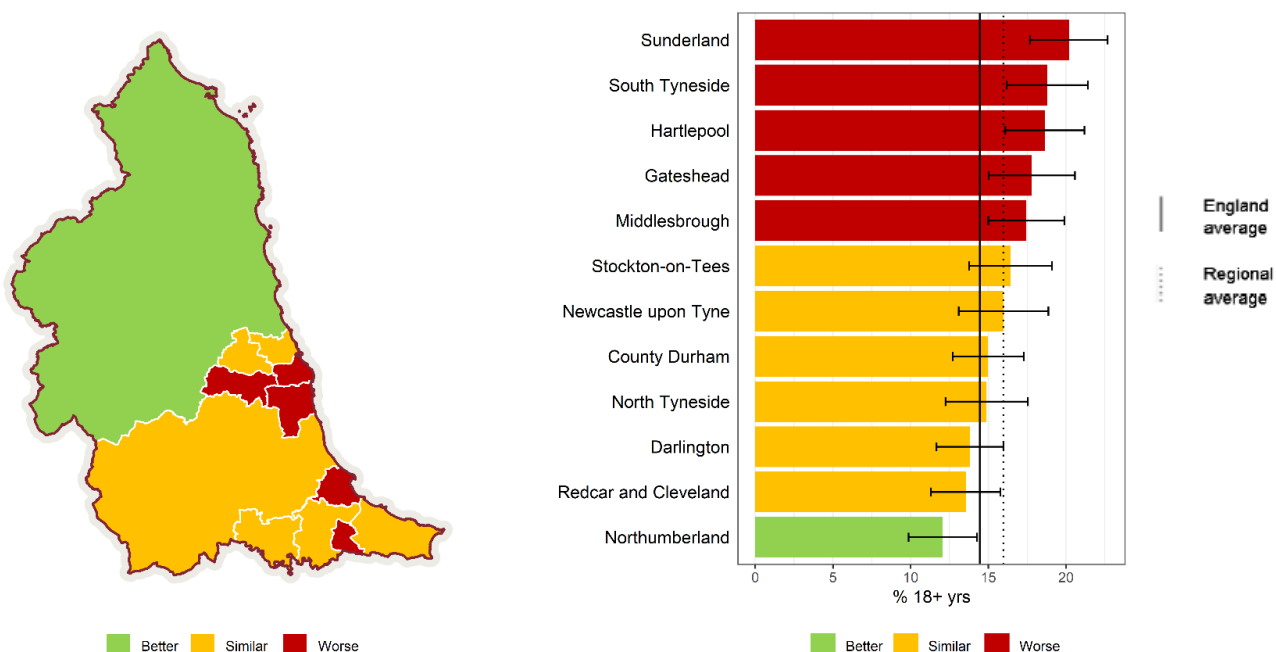
Source: Annual Population Survey, ONS, published in Fingertips

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Figure 15: Indicators of smoking prevalence among young people

| Indicator	Period	North East			England			Best
		Recent Trend	Count	Value	Value	Worst	Range	
Smoking prevalence age 15 years - regular smokers (SDD survey)	2016	−	-	-	7%	-	*Insufficient number of values for a spine chart*	-
Smoking prevalence age 15 years - occasional smokers (SDD survey)	2016	−	-	-	8%	-	*Insufficient number of values for a spine chart*	-
Smoking prevalence at age 15 – current smokers (WAY survey)	2014/15	−	-	10.1%	8.2%	10.1%	🔴	6.1%
Smoking prevalence at age 15 – regular smokers (WAY survey)	2014/15	−	-	7.5%	5.5%	7.5%	🔴	3.4%
Smoking prevalence at age 15 – occasional smokers (WAY survey)	2014/15	−	-	2.6%	2.7%	3.5%	🟡	2.0%
Use of e-cigarettes at age 15 years (WAY survey)	2014/15	−	-	19.6%	18.4%	24.5%	🔴	11.7%
Use of other tobacco products at age 15 years (WAY survey)	2014/15	−	-	13.9%	15.2%	21.0%	🟢	11.3%

Source: PHE Local Tobacco Control Profiles

Figure 16: Smoking attributable hospital admission rates, 2017/18
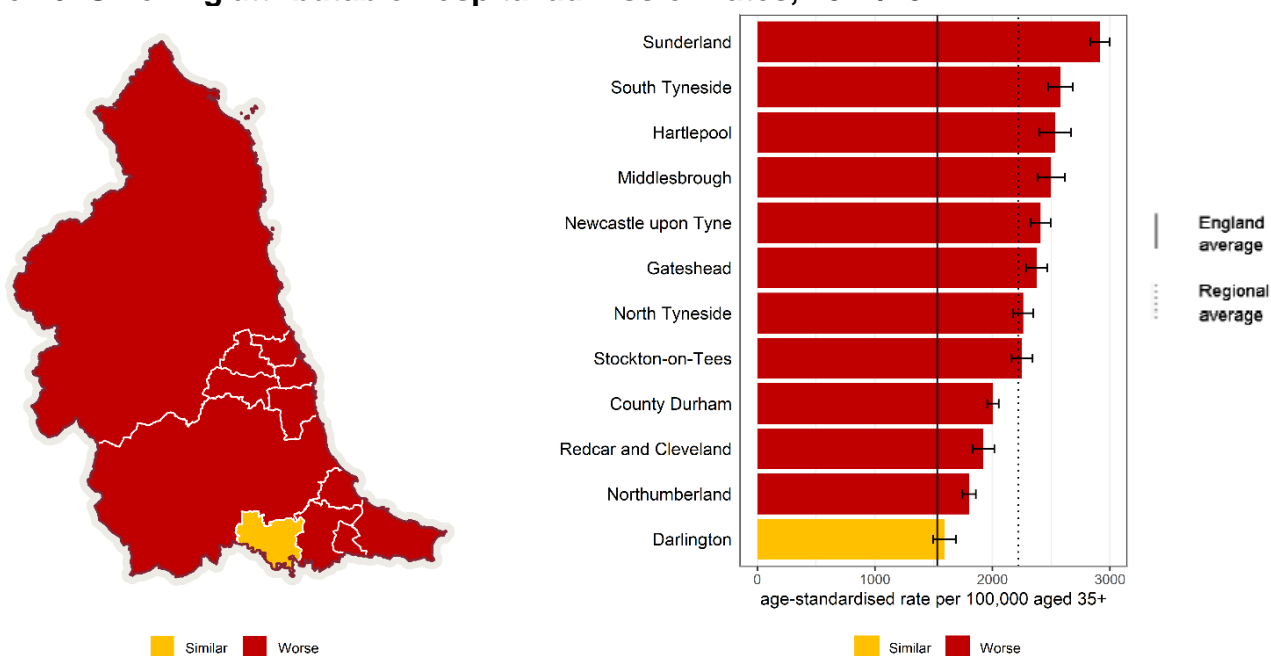
Data source: Local Tobacco Control Profiles in Fingertips at https://fingertips.phe.org.uk

2.7.4. Opportunities

The report *Local Health and Care Planning: Menu of preventative interventions* (53) makes the following recommendations:

NHS Trusts can:
- Provide screening, advice and referral in acute and mental health care settings. Secondary care providers can ensure that the discharge care plans for patients who smoke addresses their tobacco dependence.
  There is evidence of Stop Before Your Op initiatives being introduced in many areas in the North East eg Northumberland and North Tyneside and South Tees. Work to support and monitor the development of stop smoking service provision within NHS acute Trusts

is being undertaken by the North East Smokefree NHS/Treating Tobacco Dependency Taskforce.
- Implement NICE guidance PH45 "Smoking: Harm reduction"
- Provide support for temporary abstinence for smokers unready to stop smoking completely or permanently. This may include cutting down to quit and long-term nicotine use to prevent relapse to smoking
- Use regular ante-natal screening appointments to assess all pregnant women for carbon monoxide to identify potential smoking and refer for specialist support, for example using the BabyClear initiative (54).

Mental health NHS Trusts can:
- Have smokefree buildings and grounds with staff trained to facilitate smoke cessation. The two NHS mental health Trusts in the North East both implemented smokefree policies in 2016. A report (55) summarises findings from a study that evaluated the introduction of these policies.

2.8. Alcohol

2.8.1. Description

Excessive alcohol consumption can increase your cholesterol and blood pressure levels and contribute to weight gain (16). All these effects increase your risk of cardiovascular disease.

2.8.2. Ambition

The Chief Medical Officers' current guidelines for low-risk drinking are:
- it is safest not to drink more than 14 units a week on a regular basis
- if you regularly drink as much as 14 units per week, it is best to spread your drinking evenly over 3 or more days. Having one or two heavy drinking episodes a week, increases your risk of death from long-term illness and from accidents and injuries. (Figure 20)
- the risk of developing a range of health problems (including cancers of the mouth, throat and breast) increases the more you drink on a regular basis.
- a good way to cut down the amount that you drink is to have several drink-free days every week

2.8.3. Evidence

There were over 600,000 cardiovascular alcohol-related hospital admission episodes in England in 2017/18 (broad measure, based on primary and secondary diagnoses). In the North East region the equivalent figure was over 34,000 admissions: the highest rate was in South Tyneside, and the lowest in Darlington (Figure 17).

Despite this, only a quarter of respondents to a BALANCE survey (56) were aware that alcohol can cause heart disease. BALANCE estimate that: i) more than one fifth of the adult population

in the North East drinks in excess of the weekly 'low risk' guideline of 14 units; and ii) more than one third of adults aged 45-54 in the region consume more than 14 units per week, and iii) 11% consume more than 29 units. Of those who admit to drinking double the low risk guideline, three quarters believe they are a 'light or moderate drinker' (56).

Figure 17: Admission episodes for alcohol-related CVD conditions 2017/18 (broad definition)
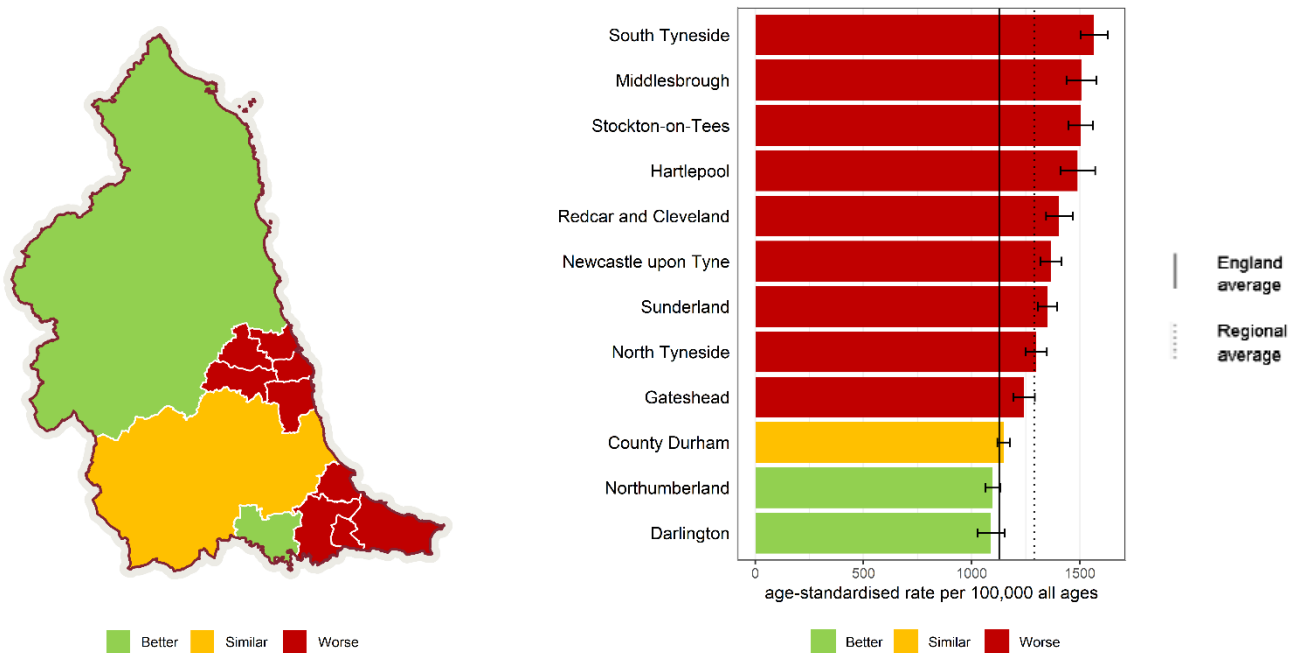
Data source: Hospital episode statistics (HES), NHS Digital. Rates calculated by PHE and published in Local Alcohol Profiles for England within the Fingertips tool (https://fingertips.phe.org.uk)

Figure 18 Percentage of adults binge drinking on heaviest drinking day, 2011-14
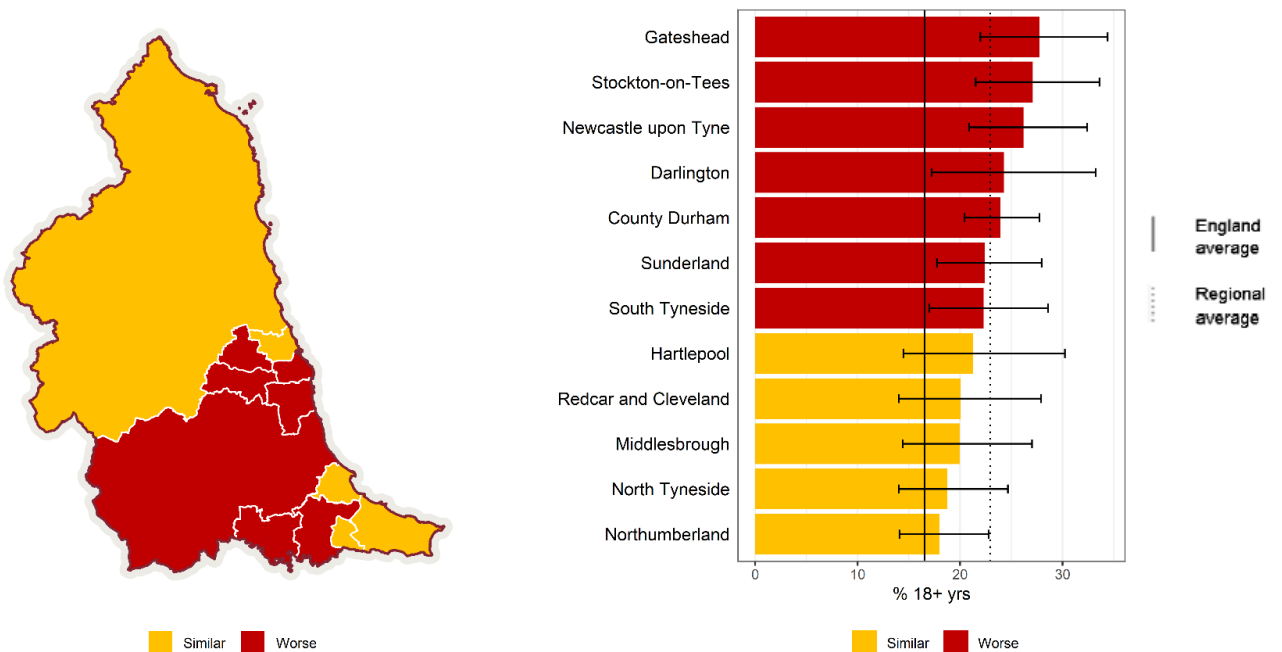
Data source: Secondary analysis of Health Survey for England data by PHE, published in Local Alcohol Profiles for England within the Fingertips tool (https://fingertips.phe.org.uk)

2.8.4. Opportunities

The following are recommended within PHE's Menu of Preventative Interventions (53 pp. 9-10)

NHS Trusts, CCGs and local authorities can:
Establish and/or optimise Alcohol Assertive Outreach Teams (57) (58) and alcohol care teams in district general hospitals (59). The NHS Long-Term Plan includes a commitment that "hospitals with the highest rate of alcohol dependence-related admissions will be supported to fully establish Alcohol Care Teams" (60).

General Practices and NHS Trusts can:
Provide alcohol Identification and Brief Advice in primary and secondary care settings (61) (62)

2.9. Air pollution

2.9.1. Description

Air pollution is the presence in the atmosphere of gases such as nitrogen dioxide, nitric oxide (NO_2), sulphur dioxide, carbon monoxide, and fine particulates. Fine particulates are defined as those between 2.5 and 10 microns in size which, if inhaled, can cause serious harm to health. As a general rule, the smaller the size of the particulate (nearer to 2.5 microns), referred to as $PM_{2.5}$, the greater the risk to health. Air pollution can result from of natural events such as volcanic activity, or human activity. This section of the report concentrates on air pollution that is the result of human activity, and consequently modifiable.

Evidence indicates that air pollution and cardiovascular morbidity and mortality are correlated (63) (64) (65) but proximity to the source of pollution, time of day, environmental factors, and personal characteristics all affect an individual's exposure and response to air pollution. Further details on airborne pollutants may be found in the Government's 'Clean Air Strategy 2019' (66).

2.9.2. Ambition

Ambient pollution, from vehicles industry or agriculture:
- to reduce $PM_{2.5}$ levels to an annual average of 25 μg/m^3 by 31 December 2020 in the UK (excluding Scotland) (67). It is argued that adopting the WHO guideline of an annual average levels of 10 μg/m3 would result in improvements in life expectancy (68)
- to reduce roadside NO_2 concentration 'hotspots' to within statutory limits[1], as quickly as possible, and "to transform the UK's most polluted towns and cities into clean and healthy urban spaces, supporting those most directly affected

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[1] 8 Hourly mean limit value – 200 micrograms per cubic metre not to be exceeded more than 18 times a calendar year Annual mean limit value – 40 micrograms per cubic metre

and ensuring that vehicle manufacturers play their part to improve the nation's air quality." (69)

Household:

- to restrict the sale of less efficient stoves, and prohibit the sale of the most polluting fuels eg coal and 'wet' wood. The use of wood in domestic combustion activities accounted for 36 per cent of PM2.5 emissions in 2017. (70)

2.9.3. Evidence

Air pollution increases the risk of cardiovascular disease by causing cell and tissue damage and inflammation, arterial blood clots and an irregular heartbeat (71). There appears to be stronger evidence to support the negative effect of particulates than for gaseous pollutants (72).

In 2016, the North East had the lowest average annual concentration of human-made fine particulate matter ($PM_{2.5}$) of the nine English regions (73). All local authorities in the North East in 2016 had average annual concentrations of $PM_{2.5}$ below WHO guidelines of 10 µg/m3 (Figure 19). Note that these are average figures, and that levels of particulates vary depending on the time of year, day, proximity to the source of exposure, and the prevailing weather. Information on 2016 and 2017 annual average $PM_{2.5}$ roadside concentrations can be found on the Department for Environment Food & Rural Affairs (DEFRA) UK Air Information Resource website.

Figure 19: Mean levels of fine particulate matter (µg/m³) by North East local authority, 2016

Area	Recent Trend	Neighbour Rank	Count	Value		95% Lower CI Lower CI	95% Upper CI Upper CI
England	–	-	-	9.3		-	-
North East region	–	-	-	6.8		-	-
Middlesbrough	–	-	-	7.6		-	-
Stockton-on-Tees	–	-	-	7.3		-	-
South Tyneside	–	-	-	7.1		-	-
Redcar and Cleveland	–	-	-	7.1		-	-
Sunderland	–	-	-	7.1		-	-
Hartlepool	–	-	-	7.1		-	-
North Tyneside	–	-	-	7.0		-	-
Darlington	–	-	-	7.0		-	-
Newcastle upon Tyne	–	-	-	6.9		-	-
Gateshead	–	-	-	6.8		-	-
County Durham	–	-	-	6.5		-	-
Northumberland	–	-	-	6.1		-	-

source: PHE (2019) Fingertips at Public Health Profiles

Analyses by Mitchell and colleagues (74) suggest that whilst there have been substantial improvements in air quality in Great Britain, it has not been equally distributed: people in more deprived areas have benefitted less from those improvements.

Figure 20: 2015 deprivation index plotted against mean levels of fine particulate matter (µg/m³) 2016 by North East local authority

Source: Fingertips, Public Health England at https://fingertips.phe.org.uk
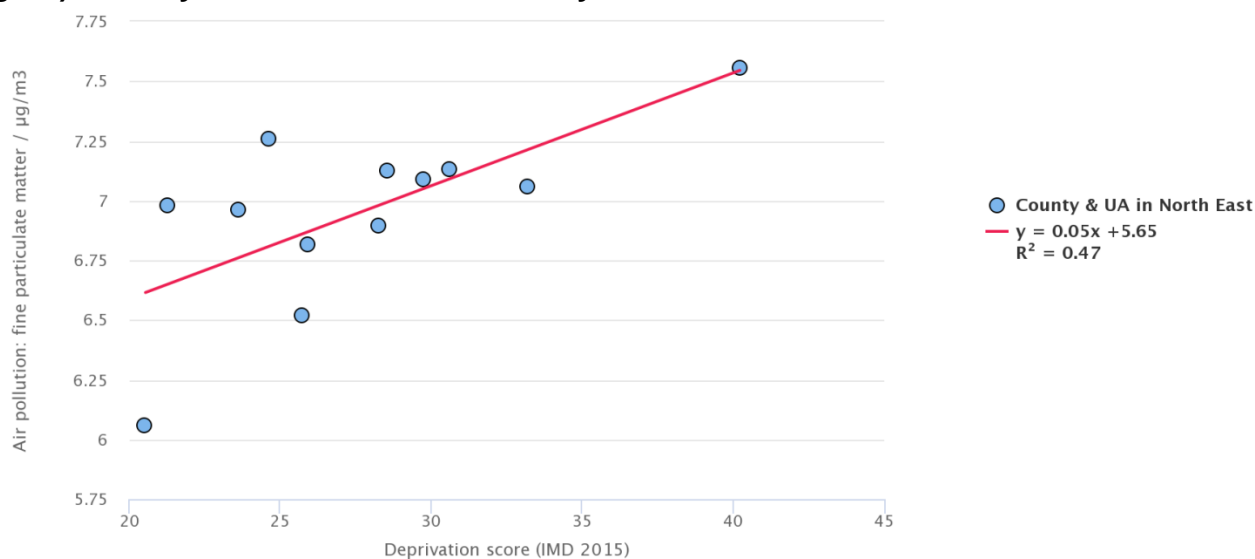
DEFRA, in its 'UK plan for tackling roadside nitrogen dioxide concentrations' (69) states that their current priority is to reduce the levels of roadside nitrogen dioxide (NO_2), the only air quality limit that is currently unmet.

Table 1 shows the best NO_2 forecast for North East local authorities which had in 2017 one or more roads with NO_2 concentrations above statutory limits (69).

Table 1: North East local authorities with concentrations of NO_2 forecast above legal limits and assuming no additional measures.

All figures are provided in µg/m³: 40 µg/m³ is the statutory annual mean limit value for NO_2
Action: Required to produce local action plans by March 2018 on the basis of modelling which indicates a number of roads need a solution

Council	year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Middlesbrough Borough Council		53	59	56	52	49	45	43	40	38	36	35	33	32	31
Gateshead Met. Borough Council		53	51	48	46	43	40	38	36	34	32	30	29	28	27
Newcastle City Council		53	51	48	46	43	40	38	36	34	32	31	29	28	27
North Tyneside Council		50	48	46	44	41	38	36	34	32	31	29	28	27	26

Source: Department for the Environment, Food and Rural Affairs (2017)

Mapped air pollution information can be accessed using the **S**trategic **H**ealth **A**sset **P**lanning and **E**valuation (SHAPE) tool (75), free to NHS professionals and Local Authority professionals with a role in public health or social care.

2.9.4. Opportunities

Local authorities can:
Develop policies that will improve air quality. These could include:
- changing road layouts at congestion and air pollution pinch points;
- encouraging public and private uptake of low emissions vehicles (emitting 75g/km CO_2 or less);
- using innovative retrofitting technologies and new fuels; and
- encouraging use of public transport." (69)

Individuals can:
- use the least polluting fuels in open fires or stoves (see Figure 21)

Individuals with a heart or circulatory condition can:
- regularly monitor the air pollution levels where they live and work using the daily pollution forecast on the Government's UK-AIR website. There is also an air pollution Twitter feed @DefraUKAir and a free telephone helpline **0800 55 66 77**. (76)

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Figure 21: Relative PM$_{2.5}$ emissions from domestic heating methods
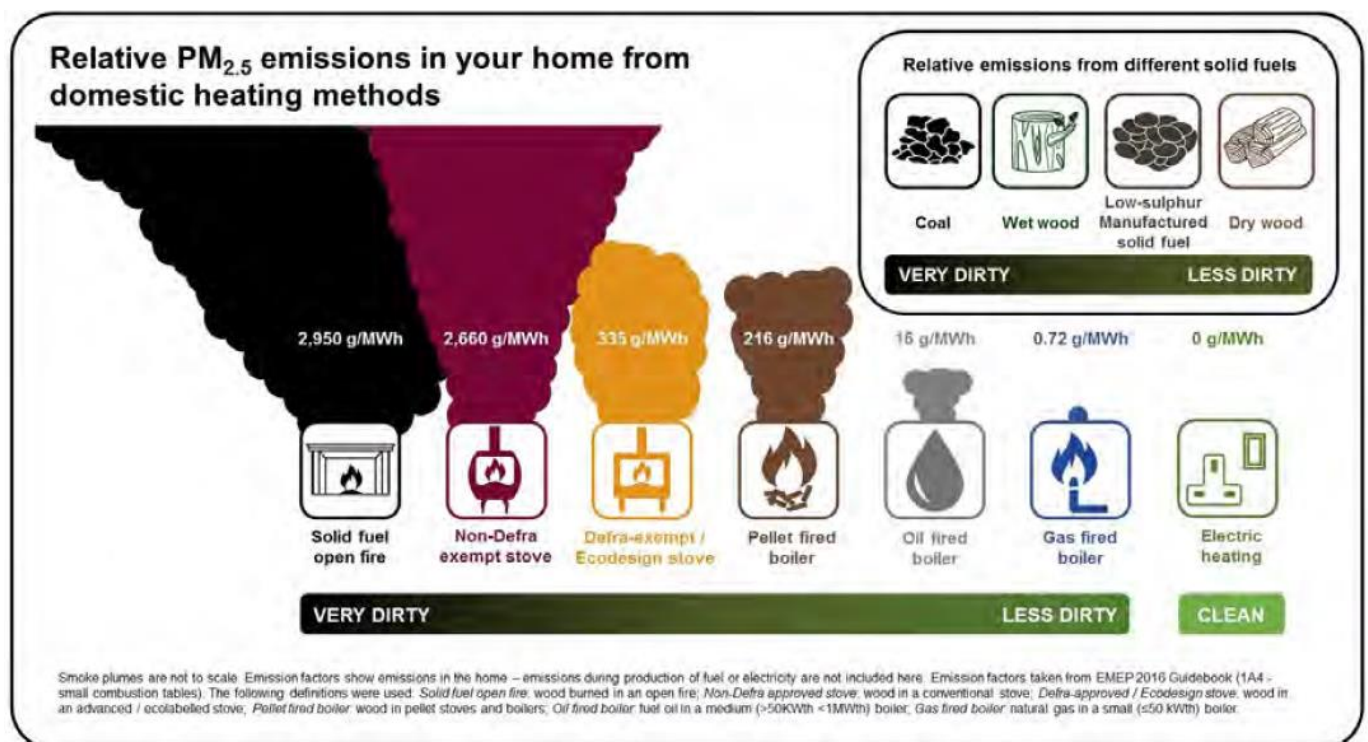
Source: Department for the Environment and Rural Affairs (66)

2.10. Non-diabetic hyperglycaemia (pre-diabetes)

2.10.1. Description

Hyperglycaemia is high blood sugar (glucose) and it is common in people with diabetes, whether diagnosed or not. Non-diabetic hyperglycaemia indicates that there is a risk of developing Type 2 diabetes and other CVD conditions. It is often referred to as pre-diabetes. Hyperglycaemia can be caused by stress, and by conditions such as pancreatitis, hyperthyroidism, and certain medications. Long-standing untreated hyperglycaemia can damage blood vessels leading to complications such as diabetic retinopathy, organ damage, heart attacks and stroke. An extremely high blood glucose level, if left untreated, can lead to coma and death.

The HbA1c blood test measures an individual's average blood sugar over the previous three months or so. In the UK, normal blood glucose levels are where HbA1c is measured to be below 42 mmol/mol (6%). Non-diabetic hyperglycaemia is diagnosed for levels between 42 & 47 mmol/mol (6% to 6.4%). HbA1c levels of 48 mmol/mol (6.5%) or above indicate diabetes.

2.10.2. Ambition:

Since 2016, all adults with non-diabetic hyperglycaemia, identified as being at high risk of developing type 2 diabetes should be offered the opportunity to take part in the Healthier You: NHS Diabetes Prevention Programme (NHS DPP) (77). This programme aims to provide tailored help on healthy eating and weight loss, providing an individual exercise programme (78). The ambition is to support up to 200,000 people per year through this programme. (79)

2.10.3. Evidence

There are estimated to be five million people in England who are at high risk of developing (largely preventable) type 2 diabetes (80). Estimates of non-diabetic hyperglycaemia for clinical commissioning groups (CCGs) in England in 2015 have been calculated by the National Cardiovascular Intelligence Network (81).

Figure 22 Estimated proportion and number of adults 16+ with non-diabetic hyperglycaemia by North East CCG by registered population, 2015

	percent	estimated number rounded to nearest 100
England	11.2	5,205,210
NHS Northumberland CCG	12.2	32,777
NHS Durham Dales, Easington and Sedgefield CCG	11.7	27,895
NHS Darlington CCG	11.5	10,008
NHS North Tyneside CCG	11.5	20,558
NHS South Tyneside CCG	11.4	14,744
NHS South Tees CCG	11.2	26,530
NHS Sunderland CCG	11.1	26,217
NHS North Durham CCG	11.1	23,496
NHS Hartlepool and Stockton-On-Tees CCG	11.0	26,114
NHS Newcastle Gateshead CCG	10.1	42,737

Data source: National Cardiovascular Intelligence Network (2016) *Prevalence estimates of non-diabetic hyperglycaemia in 2015* Public Health England

2.10.4. Opportunities

Local authorities, CCGs and Primary Care Networks (PCNs) can:
Support the implementation of the Diabetes Prevention Programme and the development of referral pathways from the NHS Health Check programme

General Practices can:
Offer people diagnosed with non-diabetic hyperglycaemia referral into the NHS DPP

Individuals can:
Reduce their risk of developing type 2 diabetes. Diabetes UK provide information to help reduce the risk of developing type 2 diabetes. (78):

- o eating well
- o moving more
- o losing weight, if you're overweight

2.11. Diabetes

2.11.1. Description

Diabetes mellitus results from of a lack of insulin or resistance to its action. It is diagnosed by measuring blood-glucose concentration. Although there are many subtypes, the two principal classes are type 1 and type 2 diabetes. (Prescribing for Diabetes)

Type 1 diabetes results from a deficiency of insulin following autoimmune destruction of pancreatic beta cells. Patients with type 1 diabetes require administration of insulin. (Prescribing for Diabetes)

Type 2 diabetes is due to reduced secretion of insulin, or to peripheral resistance to the action of insulin, or to a combination of both. Although type 2 diabetes may be controlled by diet alone, patients may also require oral antidiabetic drugs or insulin to maintain satisfactory control. In overweight individuals, type 2 diabetes may be prevented by losing weight and increasing physical activity." (Prescribing for Diabetes)

Drugs used for diabetes (British National Formulary (BNF) section 6.1) make up 11 per cent of total primary care costs (NIC) and 4.7 per cent of prescription items." (Prescribing for Diabetes)

2.11.2. Ambition

All adults with type 2 diabetes should receive all of the nine NICE recommended care processes and attend a structured education programme shortly after diagnosis. (82)

1. HbA1c (blood test for glucose control)
2. Blood pressure (measurement for cardiovascular risk)
3. Serum cholesterol (blood test for cardiovascular risk)
4. Serum creatinine (blood test for kidney function)
5. Urine albumin/creatinine ratio (urine test for risk of kidney disease)
6. Foot risk surveillance (examination for foot ulcer risk)
7. Body mass index (measurement for cardiovascular risk)
8. Smoking history (question for cardiovascular risk)
9. Digital retinal screening (photographic eye test for early detection of eye disease)

2.11.3. Evidence

In 2017/18, there were 163,000 adults 17 years and over in the North East diagnosed with type 1 or type 2 diabetes. Based on responses to lifestyle surveys it is estimated that there are another 32,000 that have diabetes but are not diagnosed, and are not thus receiving the optimum care (83)[2]. Across the North East and North Cumbria, the prevalence of recorded diabetes rose between 2009/10 and 2017/18 from 5.6% to 7.2%. Prevalence among North East CCG populations ranged from 6.3% in Newcastle and Gateshead to 8.1% in Durham Dales, Easington and Sedgefield (Figure 23).

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[2] NCVIN have estimated actual prevalence for the population 16 years and over. To calculate the gap between estimated actual prevalence and diagnosed prevalence for the North East among adults 17 years and over, the estimated prevalence among people 16+ has been applied to the QOF list size 17+.

Figure 23: Proportion of adults 17 years and over, diagnosed with diabetes, 2017/18

Diabetes: QOF prevalence (17+) New data 2017/18   Proportion - %

Export table as image   Export table as CSV file

Area	Recent Trend	Count	Value		95% Lower CI	95% Upper CI
England		3,196,124	6.8		6.8	6.8
North East and Yorkshire (Cumbria and NE) NHS region		191,145	7.2*		-	-
NHS Durham Dales, Easington And Sedgefie…		19,303	8.1		8.0	8.2
NHS Northumberland CCG		21,222	7.9		7.8	8.0
NHS North Cumbria CCG		20,553	7.7		7.6	7.8
NHS Darlington CCG		6,566	7.5		7.4	7.7
NHS South Tyneside CCG		9,564	7.4		7.3	7.6
NHS North Tyneside CCG		12,941	7.3		7.1	7.4
NHS Sunderland CCG		16,848	7.2		7.1	7.3
NHS South Tees CCG		17,137	7.2		7.1	7.3
NHS North Durham CCG		15,360	7.1		7.0	7.2
NHS Hartlepool And Stockton-On-Tees CCG		16,161	6.8		6.7	6.9
NHS Hambleton, Richmondshire And Whitby…		7,940	6.6		6.5	6.8
NHS Newcastle And Gateshead CCG		27,550	6.3		6.3	6.4

Source: Quality and Outcomes Framework (QOF), NHS Digital

Source: Fingertips, Public Health England at https://fingertips.phe.org.uk

Figure 24: % of people with diabetes receiving all 8 NICE recommended care processes 2012-2018

Key:
— England type 1
— England type 2
● North East type 1
● North East type 2
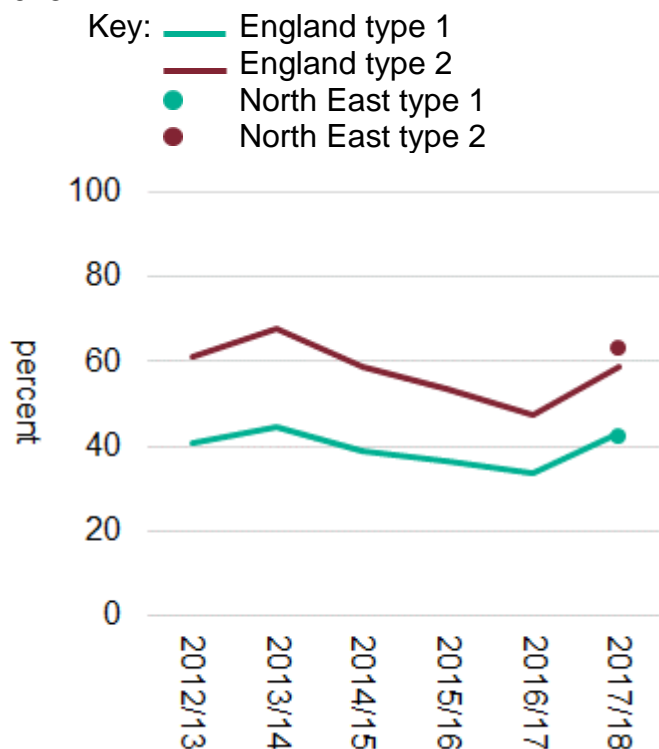
Data source: National Diabetes Audit, 2017-18

The National Diabetes Audit 2017/18 for England and Wales includes information on eight annual care processes. Both in the North East and nationally, only 40% of those diagnosed with type 1 diabetes and 60% of those diagnosed with type 2 diabetes are recorded as having received eight of the nine recommended care processes (Figure 24).

Only 15% of people in the North East diagnosed with type 1 diabetes achieve three key treatment targets: HbA1c value ≤ 58mmol/mol; blood pressure ≤140/80; and people in the combined prevention of CVD group are receiving statins. This compares with 19% with type 1 diabetes achieving the 3 treatment targets across England. For people diagnosed with type 2 diabetes, 41% meet the three key treatment targets in the North East compared to 40% nationally.(Figure 25)

In 2016, 76% of people newly diagnosed with type 2 diabetes in the North East were offered a structured education course, compared to 75% across England. Around 10% in the North East attend a course within 12 months, compared to 9% across England. Among people newly

diagnosed with type 1 diabetes in the North East, around 39% were offered attendance on a structured education course, the same as the England value. Around 10% attended such a course within 12 months in the North East compared to 5% across England. The low proportions attending courses may be due to incomplete recording of attendance data in GP clinical systems.

Figure 25: proportion of diagnosed diabetics meeting key treatment targets, 2017-18

Data source: National Diabetes Audit 2017-18, NHS Digital
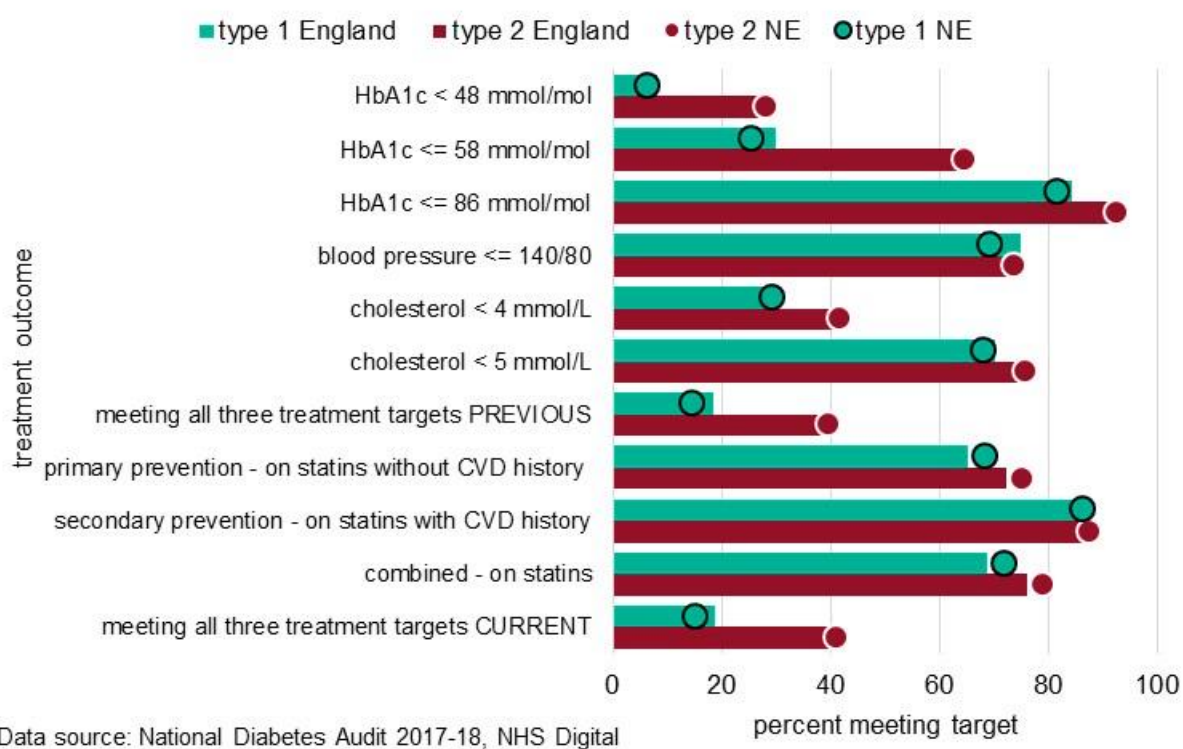
2.11.4. Opportunities

CCGs and Primary Care Networks (PCNs) can:
Review awareness, availability, accessibility and acceptability of local structured education courses among people newly diagnosed with type 1 or type 2 diabetes

GP Practices can:
Review recording of attendance at structured education courses within clinical records

3. Outcomes

3.1. Introduction

The Global Burden of Disease (GBD) study estimates the relative importance of different cardiovascular conditions in terms of both ill-health and deaths (84). Coronary Heart Disease and stroke make up three quarters of the total number of disability adjusted life years lost to CVD conditions in the North East and England (Figure 26).

Figure 26 Years of life lost (YLL) rates and years lived with a disability (YLD) rates by CVD disease group and % of total burden of CVD, 2017
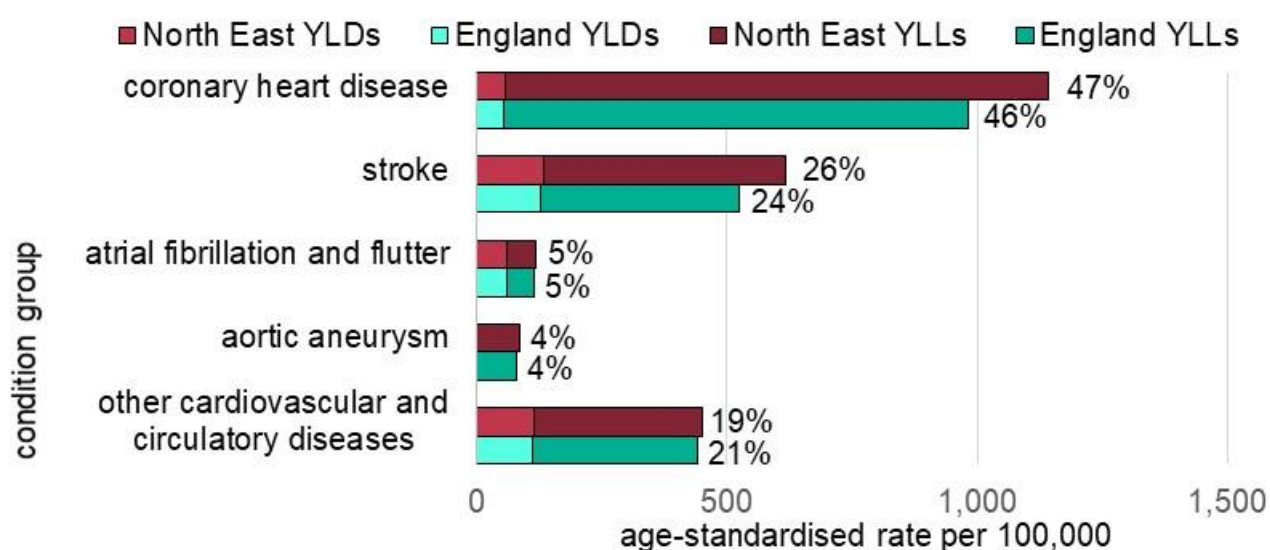
Data source: Institute of Health Metrics and Evaluation, Global Burden of Disease; analysis LKIS NE, PHE

Between 2015 and 2017, nearly 30% of all North East residents dying from CVD were aged under 75 years (Figure 27). The gap in the under 75 age-standardised CVD mortality rate between the North East and England has narrowed over the past 15 years but the rates in the North East is still significantly (14%) higher than the England rate. (Figure 28)

Figure 27: Average annual deaths in the North East by CVD disease group, 2015-17
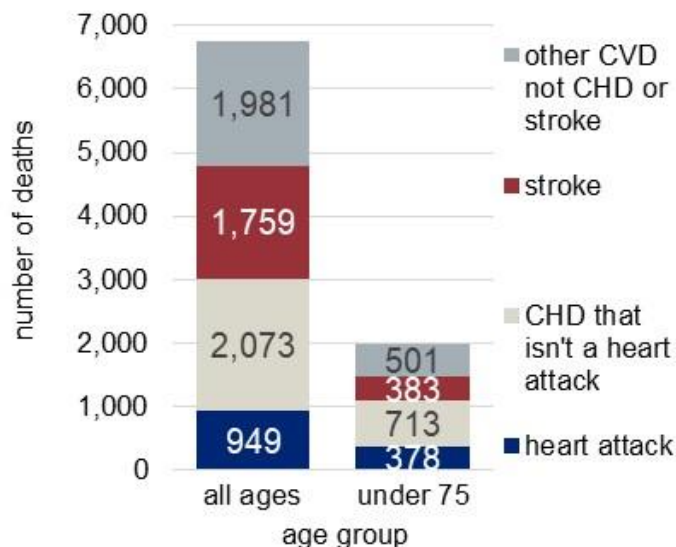
Source: PHE from ONS deaths data

Figure 28: Under 75 mortality rate from all cardiovascular diseases, North East region showing gap as % of England rate
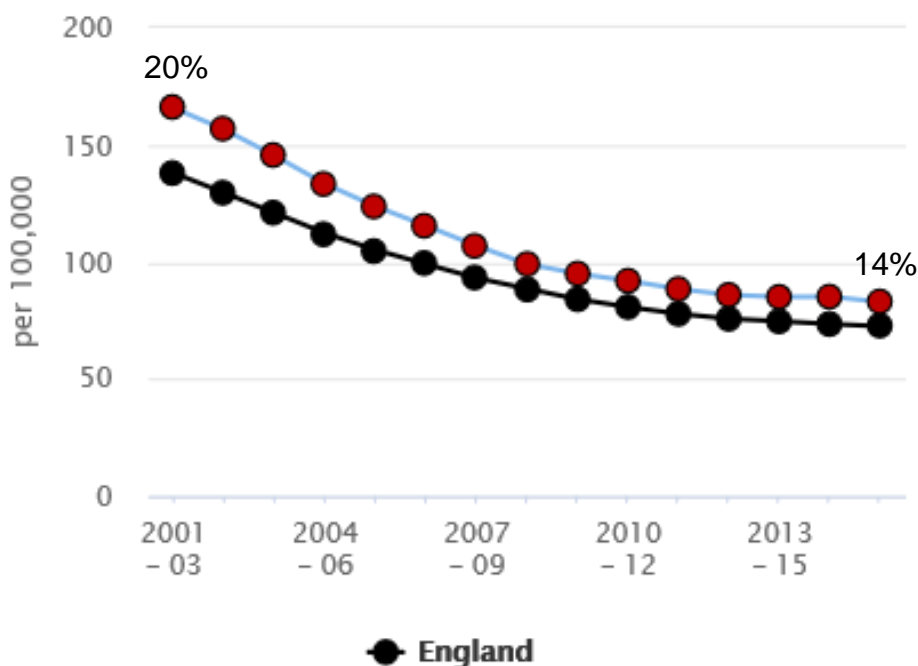
Early mortality (deaths under 75 years of age) due to CVD disproportionately affects more socially and economically disadvantaged communities. The age-standardised rate among the 10% most disadvantaged populations in England is over three times as high as the rate among the most advantaged 10% (Figure 29).

Figure 29: Under 75 mortality rate from all cardiovascular diseases (persons), by decile of English lower super output area, 2015-17, age-standardised rate per 100,000

Source: Fingertips, PHE at https://fingertips.phe.org.uk
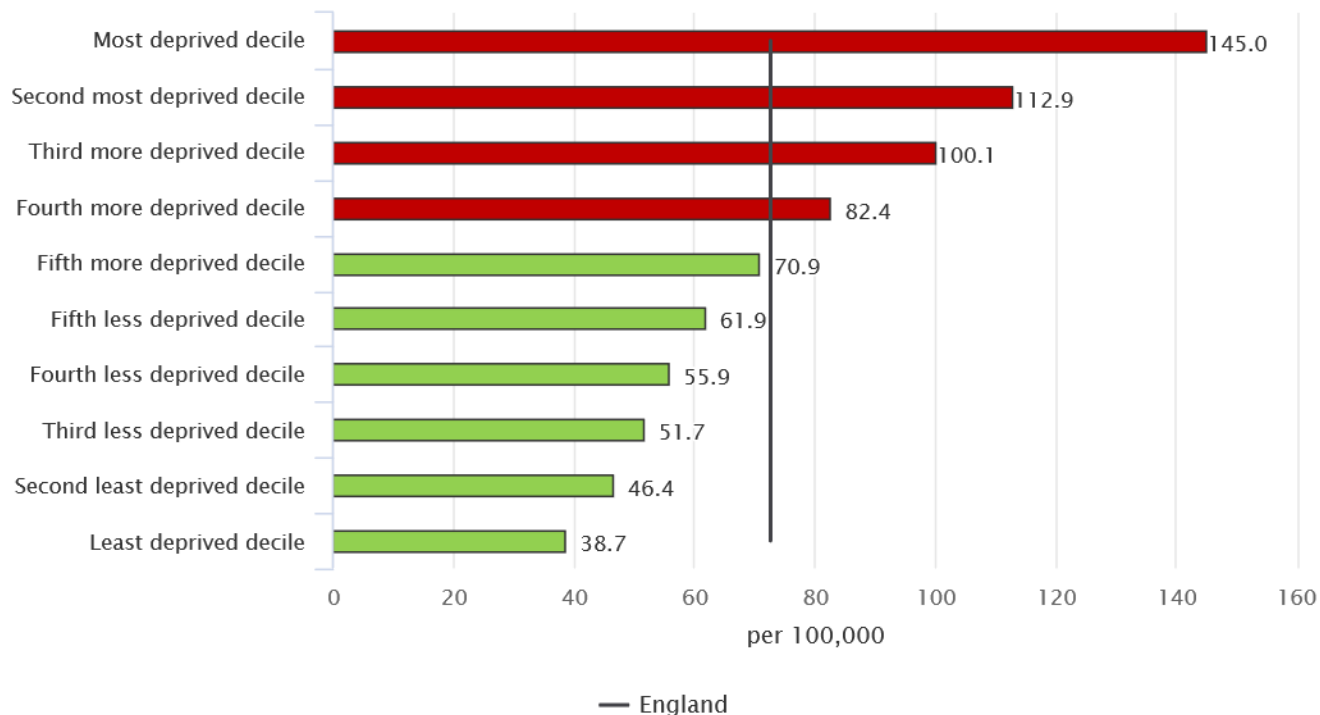
3.2. Coronary heart disease (CHD)

Coronary heart disease occurs when the blood supply to the heart becomes impeded or blocked by fatty deposits.The main symptoms of coronary heart disease are: i) angina; ii) heart failure; and iii) heart attack. These are described in more detail below.

3.3. Angina

3.3.1. Description

Angina, also known as angina pectoris, is the name given to chest pain caused by a restricted blood supply to the heart. Angina can be classified as either stable or unstable:

- stable angina tends to occur after exertion and subsides after rest or medication
- unstable angina is a more serious condition and occurs when resting or without exertion. The pain may last for more than 10 minutes and can indicate an imminent heart attack
- the pain is often described as dull/heavy/cramping and the chest feels tight: the pain may extend to the left arm, neck, back or jaw. The pain may not always be severe

There are two other causes of angina:

- variant angina, when a coronary artery supplying blood and oxygen to your heart goes into spasm
- microvascular angina, which is usually linked to exertion and may not be detected when investigated (85)

Angina can be debilitating and may require lifelong treatment to reduce the risk of a heart attack or stroke. It is significantly associated with heart failure, cardiovascular hospitalization, and coronary revascularization (86).

3.3.2. Evidence:

The prevalence of angina increases with age, and is higher in men than in women. Prevalence in England is estimated to be 2.90% amongst men, and 1.65% in women (87).

Standardised emergency admission rates with a primary diagnosis of angina (2015-17) were significantly higher in the North East than in England as a whole (Figure 30).

Figure 30: Directly age-standardised emergency admission rates for angina, 2015-2017
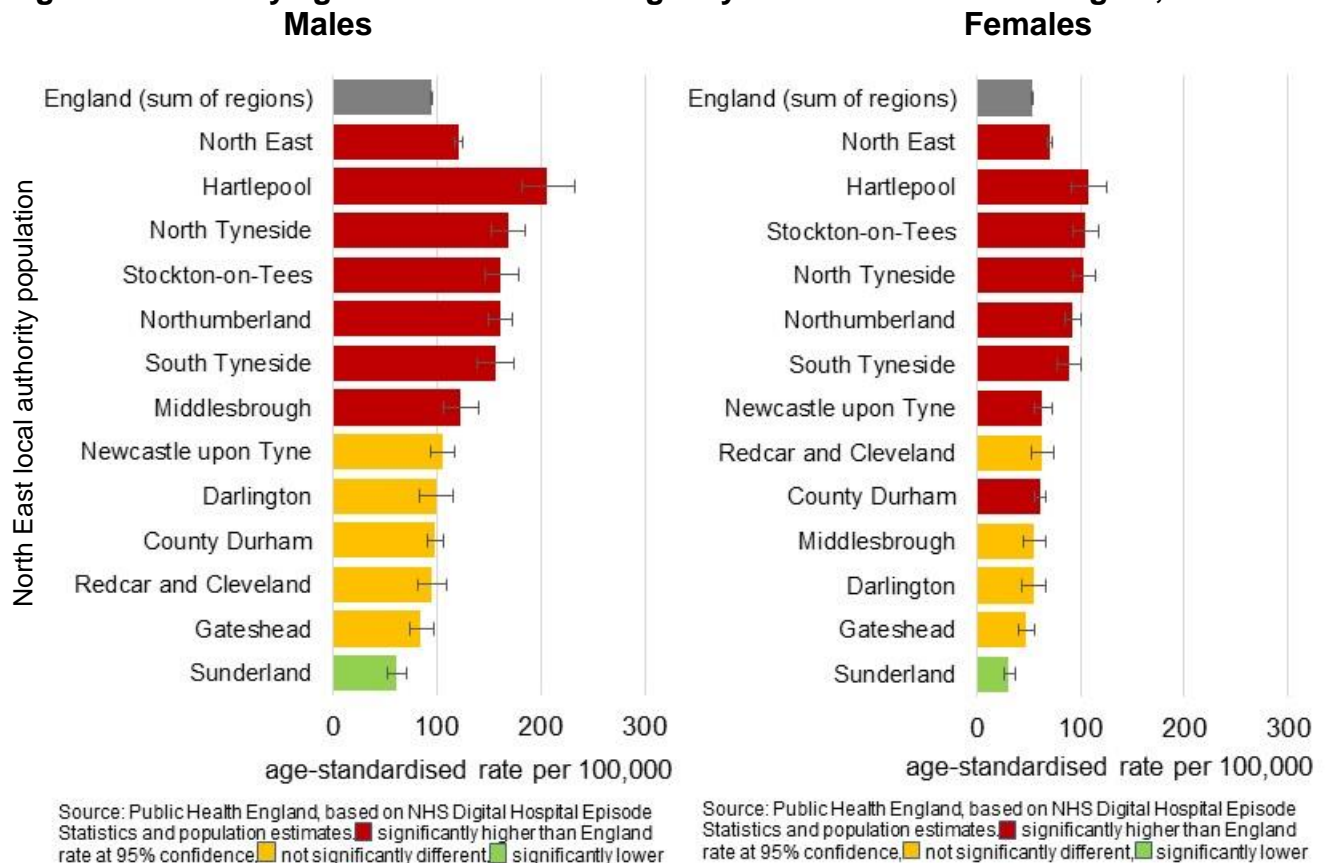
Source: Calculated by PHE using data from NHS Digital HES and ONS Mid Year Population Estimates.

3.3.3. Opportunities:

Variation in rates of emergency admissions may be due to differences in the characteristics of local populations. Modifiable factors that increase the risk of angina include smoking, physical inactivity and a poor diet.

40

NHS acute trusts can:

Review care processes using a clinical audit tool developed by NICE (88) to measure current practice against the recommendations in NICE Guideline CG126 (89).

3.4. Heart failure

3.4.1. Description

Heart failure occurs when the heart does not pump enough blood around the body. It can be a symptom of coronary heart disease, it may be congenital or it can be the consequence of heart damage (90) (91). Symptoms can include tiredness and shortness of breath, even when resting, fluid retention, dizziness or fainting.

3.4.2. Ambition

Ambitions relating to high blood pressure, diabetes, cholesterol, physical activity, obesity, smoking, alcohol and diet are all relevant to reducing the number of people developing heart failure in the future.

3.4.3. Evidence

Between 2009/10 and 2017/18 the prevalence of diagnosed heart failure in England increased from 0.7% to 0.8% (92) (93). In Cumbria and the North East over the same period, it increased from 0.9% of the population to 1.2%, the higest recorded prevalence of heart failure of all NHS regions. Prevalence is measured as a crude rate and so variations in prevalence may reflect differences in the age structure of populations or the effectiveness of case finding and recording.

Darlington CCG has the highest prevalence of heart failure in the region (93), but the lowest rate of admission to hospital (Figure 31), significantly lower than England as a whole. Darlington also had one of the lowest mortality rates from heart failure in the region in 2015-17 (94). A similar pattern can be seen for Durham Dales, Easington and Sedgefield CCG.

Figure 31: Heart failure admissions for North East CCG populations, 2017/18

Heart failure admissions (all ages) 2017/18   Directly standardised rate - per 100,000

Area	Count	Value		95% Lower CI	95% Upper CI
England	84,062	161.7		160.6	162.8
Cumbria and North East NHS region	-	-		-	-
NHS North Tyneside CCG	398	191.1		172.7	211.0
NHS Hartlepool And Stockt...	510	189.2		173.0	206.4
NHS South Tyneside CCG	282	185.4		164.2	208.4
NHS North Cumbria CCG	663	178.8		165.4	192.9
NHS Northumberland CCG	632	169.4		156.3	183.2
NHS Newcastle And Gateshe...	724	168.0		155.9	180.8
NHS Sunderland CCG	429	161.1		146.0	177.2
NHS South Tees CCG	405	152.5		137.9	168.2
NHS North Durham CCG	340	139.3		124.8	155.0
NHS Durham Dales, Easingt...	398	139.0		125.6	153.5
NHS Darlington CCG	123	112.0		93.0	133.7

Source: HES, NHS Digital, ONS

Source: Cardiovascular Disease Profile, within Fingertips at https://fingertips.phe.org.uk

3.4.4. Opportunities:

The following are all key factors which reduce the risk of developing heart failure (95):

Individuals can:
- exercise regularly (physical activity)
- maintain a healthy weight
- stop smoking
- eat a healthy diet

Clinicians can:
- treat high blood pressure

Clinicians and individuals together can:
- control diabetes
- maintain healthy cholesterol levels

Individ**uals can:**
- take heart protective medications as prescribed

3.5. Heart attack

3.5.1. Description

Over time, arteries can become furred-up with fatty deposits. When the arteries affected are those that supply blood to the heart, this is known as a form of coronary heart disease. When a heart attack occurs, the heart muscle is damaged because arterial blood supply to the heart is severely restricted or stops. A heart attack is life-threatening and is a medical emergency.
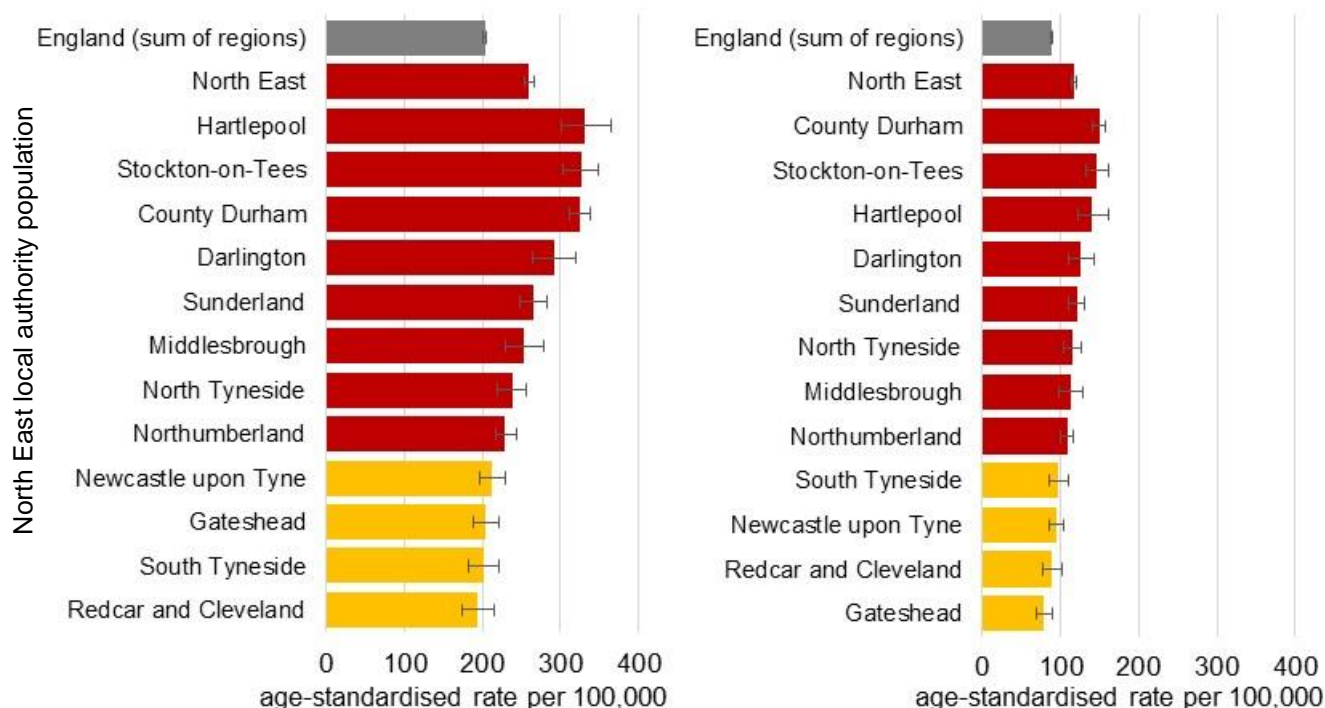
3.5.2. Ambition

The NHS Long Term Plan (Section 3.67) has set an ambitious target of diagnosing and treating 150,000 people in England with familial hypercholesterolaemia, who would otherwise be at risk of early heart attacks (60).

3.5.3. Evidence

There were an average of 4,800 emergency hospital admissions due to a heart attack each year among the North East population, 2015-2017. Males were more commonly admitted than females (3,100 admissions compared with 1,700). Emergency hospital admission rates are significantly higher than the England average in eight out of twelve North East local authority populations (Figure 32). Over the same period, patients were admitted 1.2 times (Table 3). High readmission ratios in some areas may partly explain raised emergency admission rates.

Figure 32: Emergency admission rates for heart attacks per 100,000 population, 2015-17

Source: Calculated by PHE using data from NHS Digital HES and ONS Mid Year Population Estimates

Table 3: Acute myocardial infarction (ICD10 I21-I22) emergency admission directly standardised rates per 100,000, admission to patient ratios, 2015-2017

| Area	Males	Females	Area	Males	Females
Newcastle upon Tyne	1.03	1.04	South Tyneside	1.09	1.09
Redcar and Cleveland	1.04	1.04	County Durham	1.28	1.27
Sunderland	1.04	1.06	Darlington	1.32	1.24
Gateshead	1.05	1.03	Hartlepool	1.34	1.29
North Tyneside	1.05	1.05	Stockton-on-Tees	1.37	1.31
Middlesbrough	1.05	1.04	North East	1.18	1.17
Northumberland	1.06	1.06			

There are around 900 deaths each year due to heart attacks in the North East or one third of all CHD deaths. Over the past 12 years the mortality rate due to heart attack has fallen by over half across England and in the North East (Figure 33). The mortality rate for CHD in the North East is now below the England average rate for both males and females.

Figure 33: All age mortality rate due to heart attack (gaps are % of England rate)
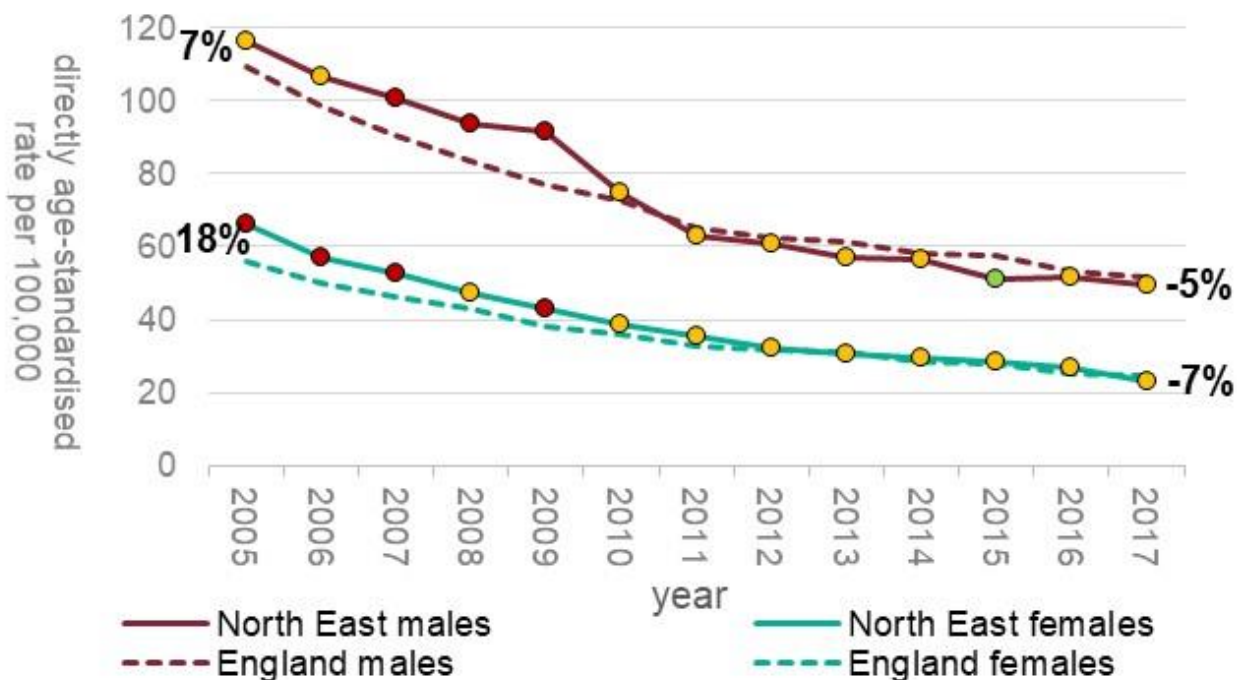
Source: Public Health England NE Local Knowledge and Intelligence Service, based on ONS deaths data
● significantly higher than England rate at 95% confidence, ● not significantly different, ● significantly lower

Figure 34: Age-standardised death rates due to heart attack by North East local authority, 2015-17
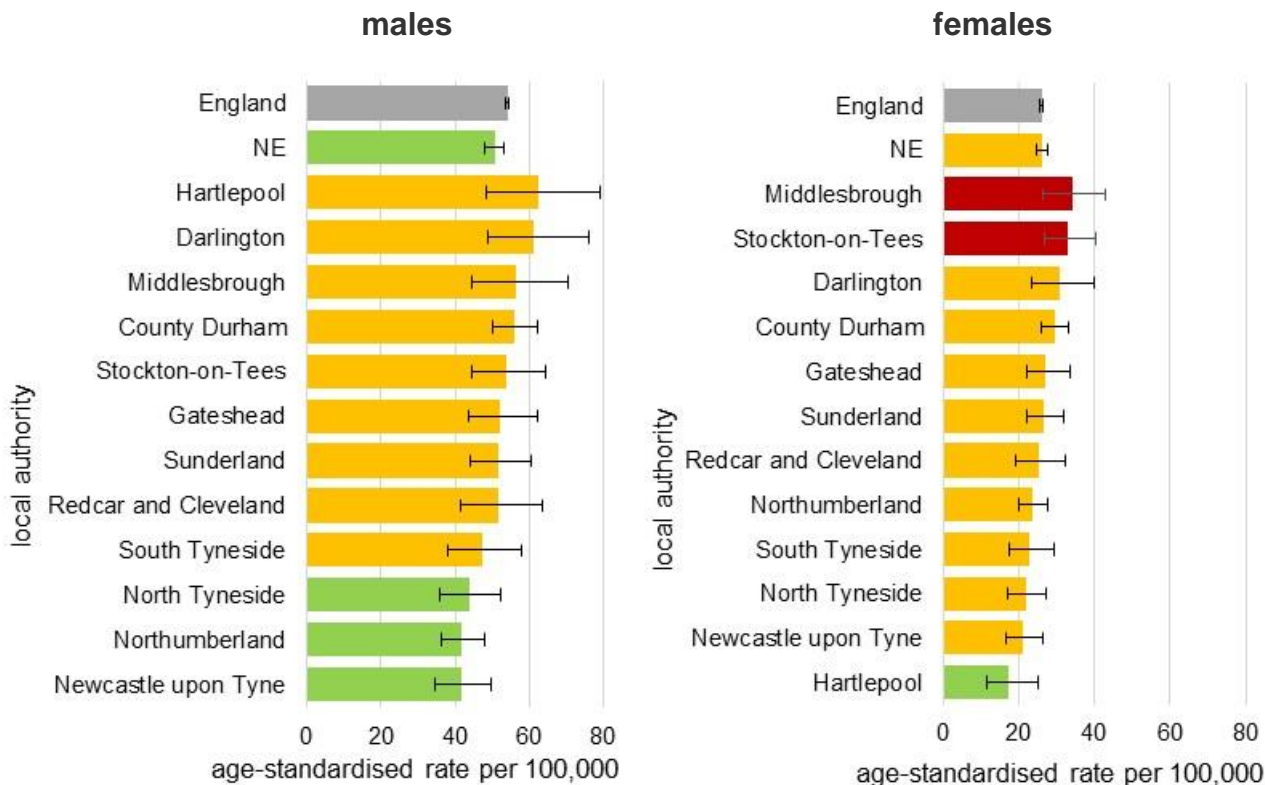
Source: Public Health England, based on ONS deaths data and population estimates. ■ significantly higher than England rate at 95% confidence, ■ not significantly different, ■ significantly lower

Source: Public Health England, based on ONS deaths data and population estimates. ■ significantly higher than England rate at 95% confidence, ■ not significantly different, ■ significantly lower

44

3.6. Atrial fibrillation

3.6.1. Description

Atrial fibrillation (AF) describes an irregular, often rapid, heart rate. This condition ranges in intensity from occasional and of varying duration, through to permanent. The risk of developing AF is associated with increasing age, obesity, hypertension, alcohol consumption, heart disease and other chronic conditions such as diabetes. AF can increase the risk of stroke, and heart failure.
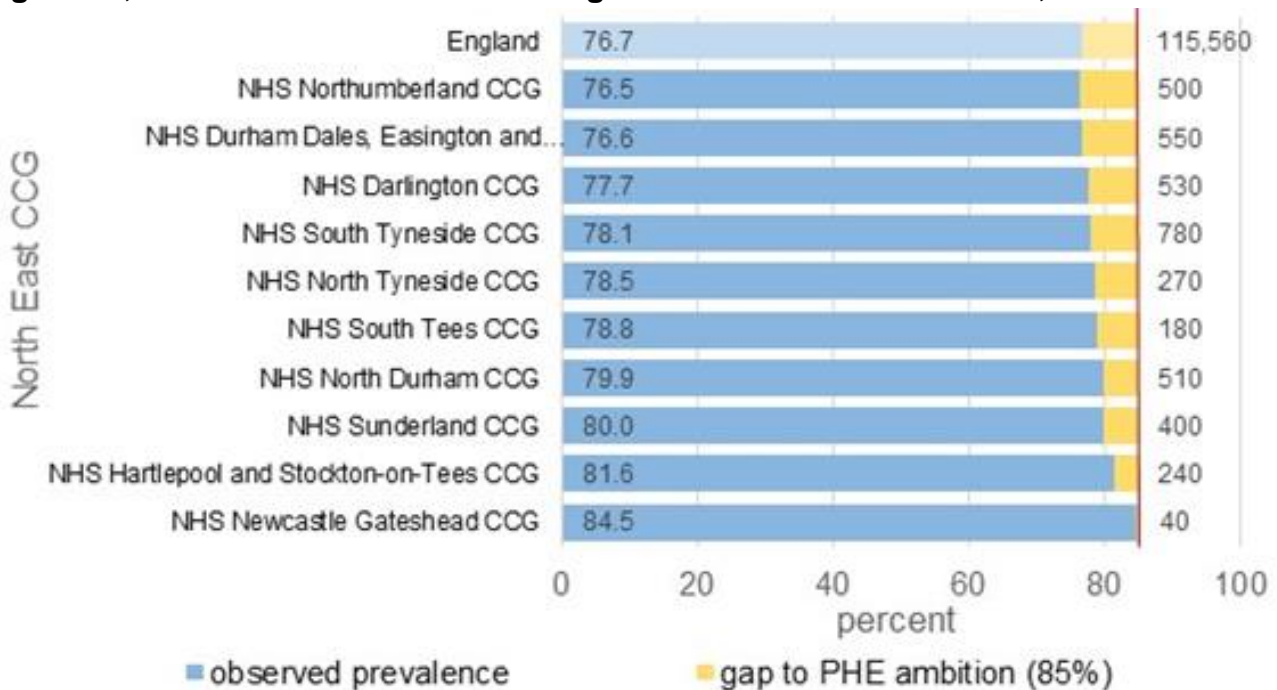
3.6.2. Ambition

Diagnosis: 85% of the expected number of people with AF are diagnosed by 2029 (20)

Treatment: 90% of patients with AF who are known to be at high risk of a stroke are adequately anticoagulated by 2029[3] (20)

3.6.3. Evidence:

Figure 35: Proportion of the population estimated to have atrial fibrillation that are diagnosed, and number needed to be diagnosed to meet 85% ambition, 2016/17

Data source: adapted from data published in CVD Prevention Packs, National Cardiovascular Intelligence Network

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[3] The treatment charts and gaps to ambition are based on the number of patients recorded in QOF 16/17 as being anticoagulated. Some of these individuals may not be adequately anticoagulated. The Imperial College AF Budget Impact Model estimates this to be approximately 30% of all treated patients. This is based on an assumption of 40% of Warfarin patients having a time in therapeutic range (TTR) of less than 35%, and an assumed proportion of non-vitamin K oral anticoagulant (NOAC) patients inadequately anticoagulated of 5%. The number required to achieve the target is therefore likely to be higher than indicated. Areas may choose to focus on ensuring known patients are adequately anticoagulated in the first instance.

Figure 36 Number of people with high risk atrial fibrillation that are anticoagulated, not anticoagulated and excepted, QOF 2016/17
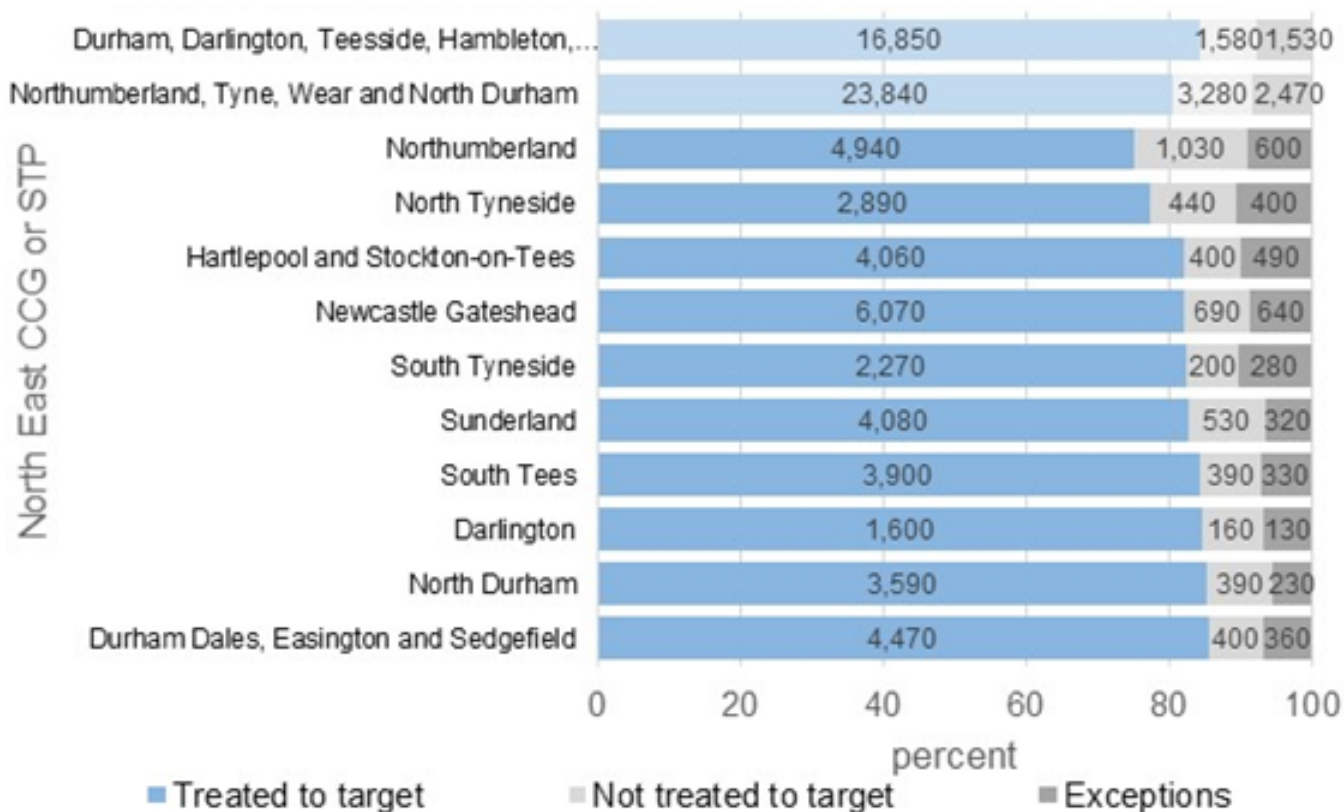
Data source: adapted from data published in CVD Prevention Packs, National Cardiovascular Intelligence Network

Note: the diganosis and treatment targets are independent of each other, and consequently it may be possible for CCGs/GP practices to attain or partially attain the treatment target by adequately treating those patients already known to have atrial fibrillation but who are not currently adequately anticoagulated[3]

Among North East CCG populations, the proportion of the expected number of people with AF that have been diagnosed varies from 76.5% in Northumberland to 84.5% in Newcastle and Gateshead (Figure 35). In most areas the proportion is above the national average of 76.7%.

3.6.4. Opportunities

The NHS Long Term Plan (Section 3.69) estimates that for every 100 people with atrial fibrilation who are diagnosed and treated with anti-coagulation medication, an average of four strokes will be averted. (60). There is evidence that treatment of people at high risk of AF-related stroke with anticoagulation is cost-effective across the health and care system over a five year timeframe (96).

Local authorities, CCGs and General Practices can:
Work together to maximise NHS Health Check programme uptake and follow up. This will increase the chance of identifying people who have atrial fibrillation but are currently undiagnosed.

GP Practices can:

Introduce regular systematic audit, using a tool such as GRASP-AF (97), to identify people at risk of an AF-related stroke who are not anticoagulated or who are sub-optimally anticoagulated

3.7. Stroke

3.7.1. Description

A stroke (referred to medically as a cerebrovascular event) occurs when the blood and oxygen supply to the brain is interrupted and causes damage to it. This may be the consequence of a blood clot (ischaemic stroke, 85% of cases) or bleeding in the brain (haemorrhagic stroke, 15% of cases) (98). A mini-stroke or transient ischaemic attack (TIA) occurs when the blood and oxygen supply is temporarily interrupted, and the symptoms resolve within 24 hours. Approximately 1 in 3 people who have experienced a mini-stroke will experience a stroke at a later date. A mini-stroke or stroke can occur at any time, and to anyone regardless of age: it is a medical emergency.

For further information, visit the Stroke association website.

3.7.2. Ambitions

Reduce the incidence of avoidable AF-related strokes by 5,000 nationally over five years. (99)

Increase the proportion of stroke patients that are admitted directly to a stroke unit within four hours – the current rate is 58% of patients (100) (101).
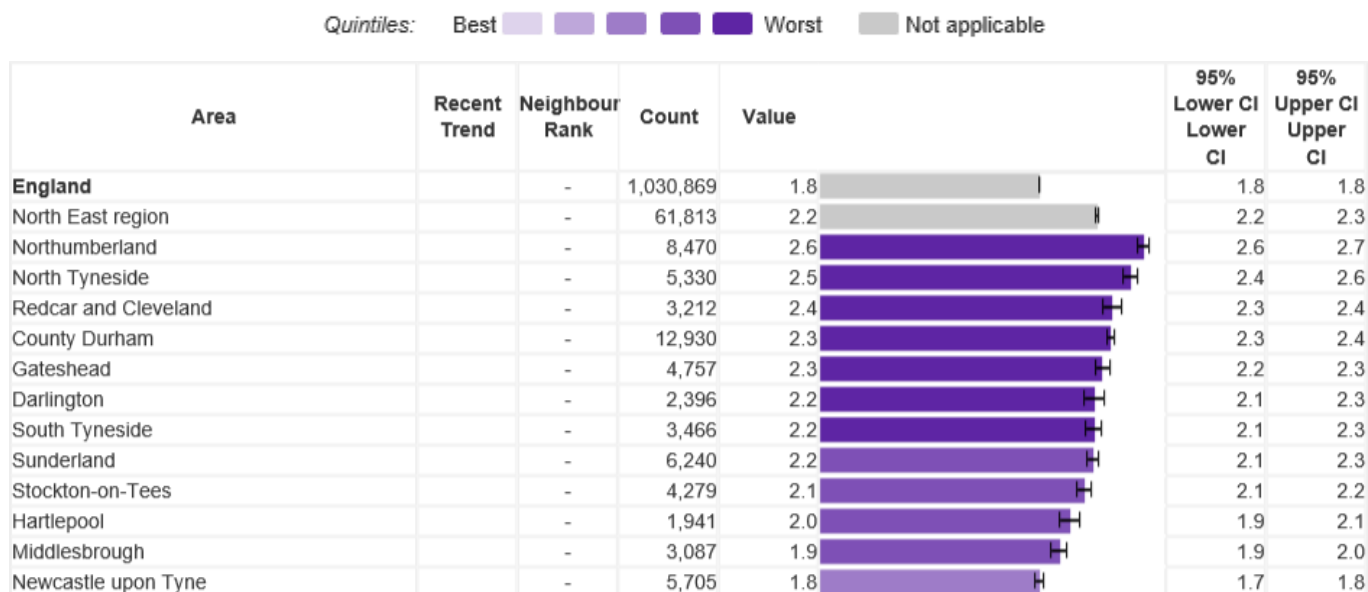
Increase the proportion of stroke patients that benefit from thrombolysis, which dramatically improves recovery if administered in time. Approximately 20% of stroke patients would benefit from thrombolysis, but only 10% currently receive it. (102 p. 64) (103 p. 6) (101 pp. 7-10)

3.7.3. Evidence

A quarter of all deaths due to cardiovascular disease in the North East of England (2015-17) are due to stroke (104). Eighty per cent of these deaths occur among people aged 75 and over (104). Without further action, the number of people having a stroke is expected to increase by almost half due to the ageing population, and the number of stroke survivors living with a disability is expected to increase by a third by 2035 (102 p. 64).

62,000 people in the North East of England have been diagnosed as having had a stroke or a TIA, the highest prevalence of all nine English regions. Prevalence figures are not age-standardised so some of the variation between areas will reflect differences in the population age structure. The recorded prevalence of stroke in England and the North East has risen steadily between 2012/13 and 2017/18 but the absolute gap has been constant at 0.4%.

Figure 37: Stroke and transient ischaemic attack (TIA), QOF prevalence, 2017/18

Area	Recent Trend	Neighbour Rank	Count	Value		95% Lower CI Lower CI	95% Upper CI Upper CI
England		-	1,030,869	1.8		1.8	1.8
North East region		-	61,813	2.2		2.2	2.3
Northumberland		-	8,470	2.6		2.6	2.7
North Tyneside		-	5,330	2.5		2.4	2.6
Redcar and Cleveland		-	3,212	2.4		2.3	2.4
County Durham		-	12,930	2.3		2.3	2.4
Gateshead		-	4,757	2.3		2.2	2.3
Darlington		-	2,396	2.2		2.1	2.3
South Tyneside		-	3,466	2.2		2.1	2.3
Sunderland		-	6,240	2.2		2.1	2.3
Stockton-on-Tees		-	4,279	2.1		2.1	2.2
Hartlepool		-	1,941	2.0		1.9	2.1
Middlesbrough		-	3,087	1.9		1.9	2.0
Newcastle upon Tyne		-	5,705	1.8		1.7	1.8

Source: Physical Activity Profile, Fingertips at fingertips.phe.org.uk, PHE 2019

Figure 38: Stroke emergency admission rates, all ages, NE local authorities, 2015-17

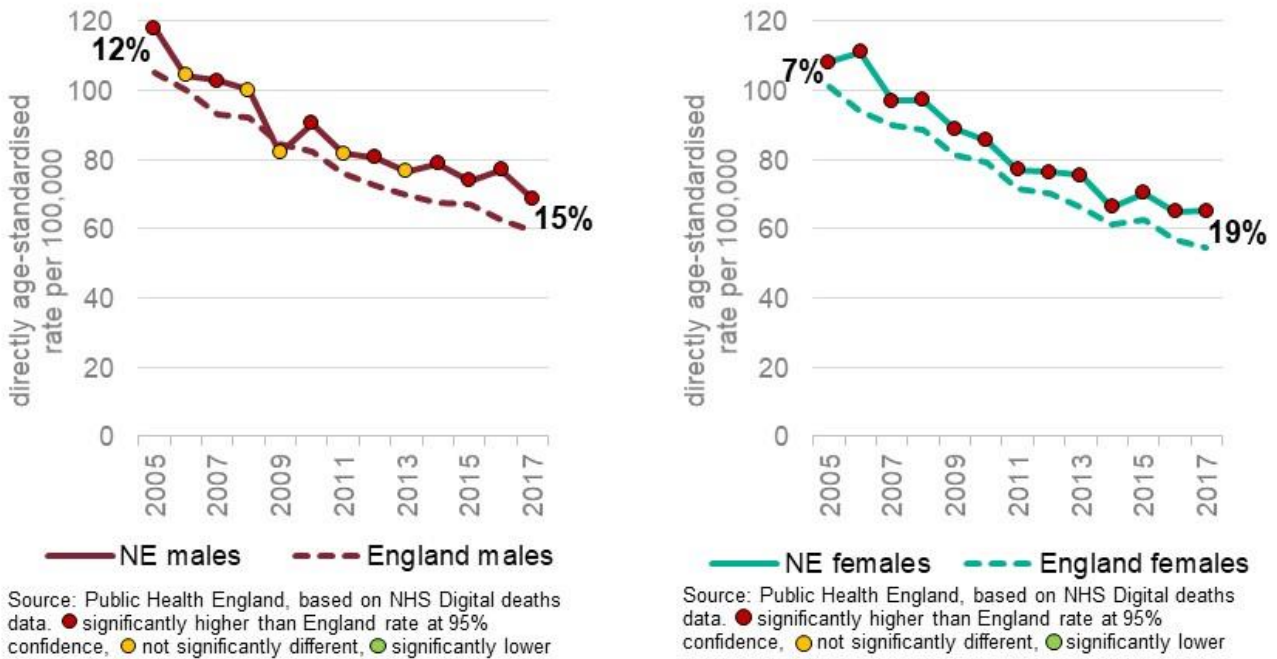Emergency hospital admission rates are significantly higher for males than females. In the North East, emergency admission rates are lowest in Redcar and Cleveland, Darlington and South Tyneside (Figure 38).

Figure 39: Age-standardised mortality rate due to stroke, all ages, NE and England

males

females

The risk of stroke increases with age, but the age-standardised mortality rate is similar for males and females. The all age standardised mortality rate has fallen by 40% over the past 12 years (2005-2017) but the North East rate is still significantly higher than the England rate (Figure 39). For both males and females, the North East rate is the highest of all nine English regions. Figure 40 shows those local authority populations where the mortality rate is highest.

Figure 40 Stroke age-standardised mortality rates, people all ages, North East local authorities, 2015-17

males

females
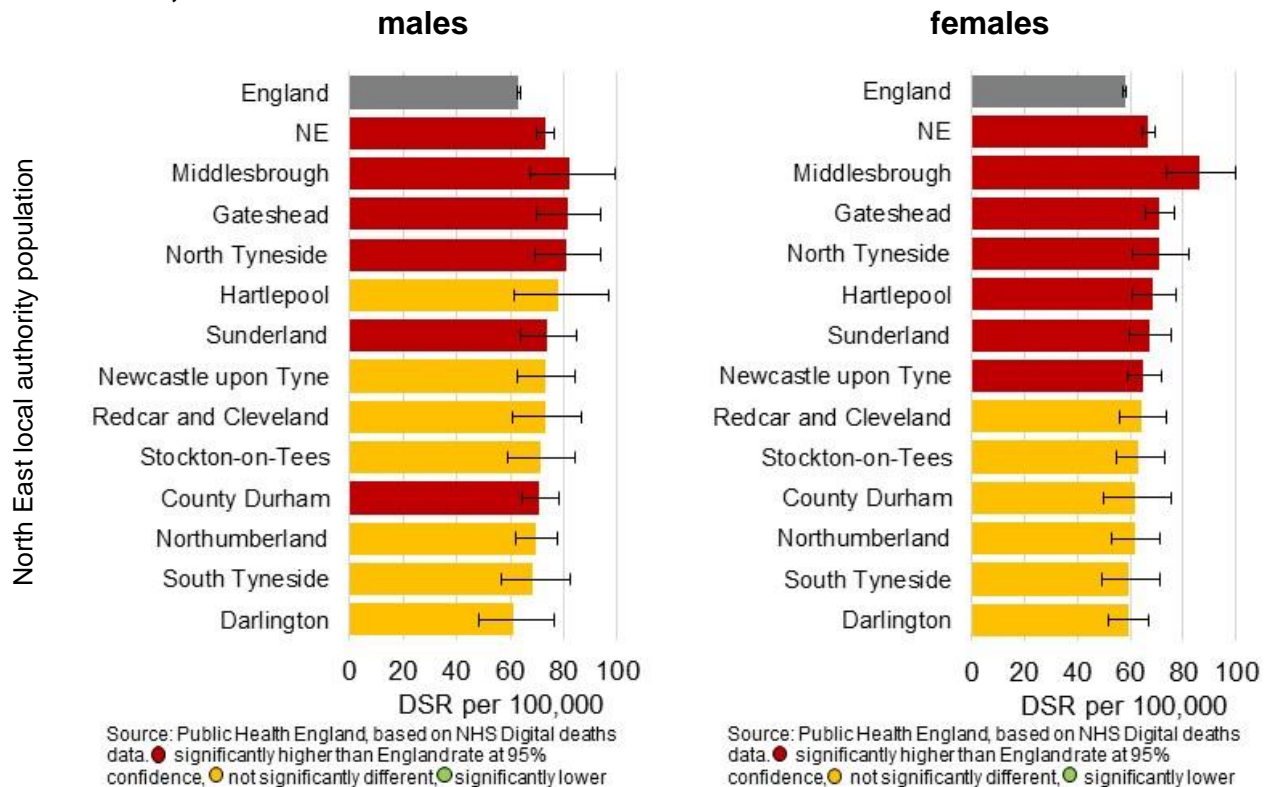
4.   Interventions

4.1.   Introduction

The CVD Prevention Return on Investment tool (105) identifies a range of medical and behavioural interventions where there is evidence of effectiveness. The tool estimates the cost effectiveness of each intervention over a 20 year period (Annex A). For many of the effective interventions, particularly those relating to the prescribing of medications, there is currently little published data showing the eligible population and the current level of access or uptake below England level. These estimates are used in an exemplar run of the model (106).

Under the terms of the new GP Contract, a new national audit programme, CVDPrevent, will provide a foundation for quality improvement in GP practices and across primary care networks (PCNs) (107). The programme will show, for every English GP practice, how many patients with six high-risk conditions for CVD are potentially undiagnosed, undertreated or overtreated. In addition to generating patient data to support clinical care, the programme will provide a broad range of metrics derived from NICE guidance, at PCN, CCG, regional and national level.

Within this chapter, data is shown summarising delivery and uptake of services that contribute to the prevention of CVD where this is currently available.

4.2.   NHS Health Check programme
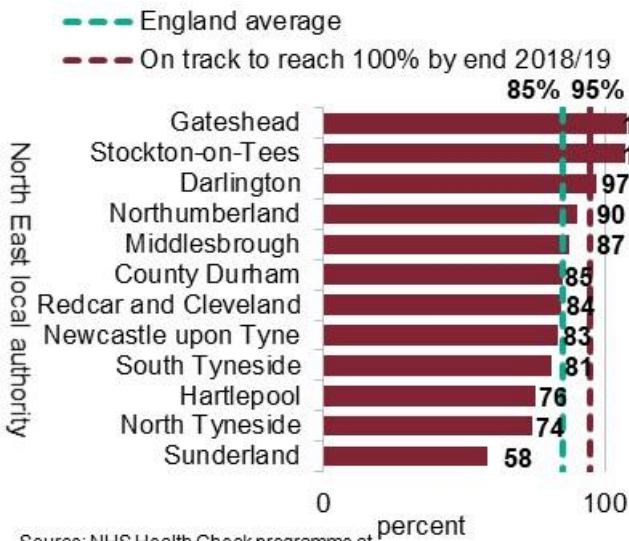
Figure 41: Impact of the NHS Health Check

Source: PHE Health Matters, Using the world leading NHS Health Check programme to prevent CVD
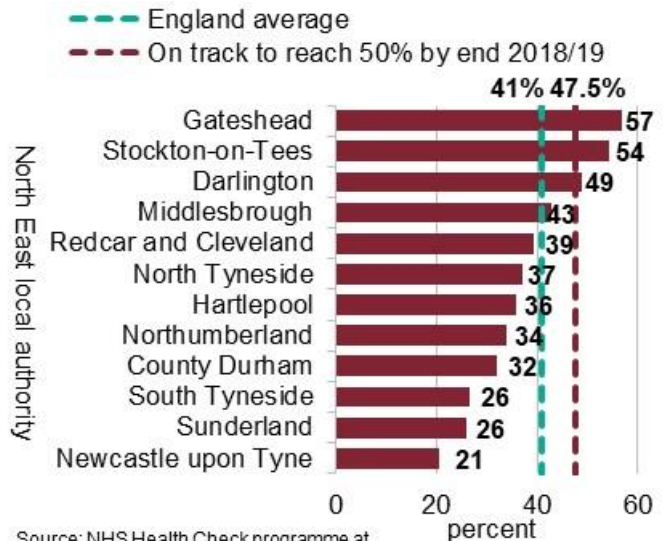
4.2.1. Activity

The NHS Health Check programme was launched in 2013 with the aim of inviting every adult between 40 and 74 years of age to a Health Check appointment once every five years. The appointment involves a number of simple questions and tests, which check an individual's risk of heart disease, diabetes, kidney disease and stroke (108).

Figure 42: Proportion of the eligible population offered an NHS Health Check, Q3 2018/19 by NE local authority

- - - England average
- - - On track to reach 100% by end 2018/19

85% 95%

Local authority	Value
Gateshead	108
Stockton-on-Tees	107
Darlington	97
Northumberland	90
Middlesbrough	87
County Durham	85
Redcar and Cleveland	84
Newcastle upon Tyne	83
South Tyneside	81
Hartlepool	76
North Tyneside	74
Sunderland	58

Source: NHS Health Check programme at https://www.nhs.uk/conditions/nhs-health-check/

Figure 43: Proportion of the eligible population receiving an NHS Health Check, Q3 2018/19 by NE local authority

- - - England average
- - - On track to reach 50% by end 2018/19

41% 47.5%

Local authority	Value
Gateshead	57
Stockton-on-Tees	54
Darlington	49
Middlesbrough	43
Redcar and Cleveland	39
North Tyneside	37
Hartlepool	36
Northumberland	34
County Durham	32
South Tyneside	26
Sunderland	26
Newcastle upon Tyne	21

Source: NHS Health Check programme at https://www.nhs.uk/conditions/nhs-health-check/
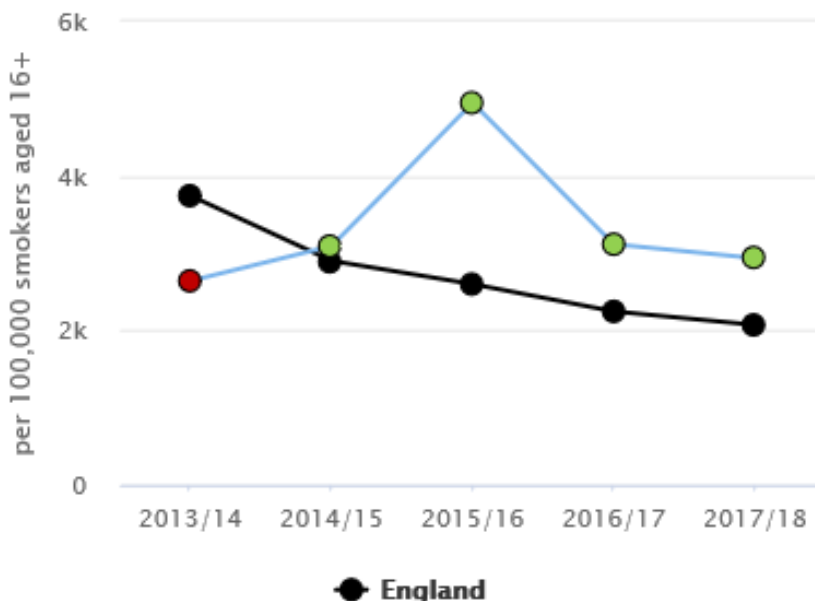
Across the North East, 85% of the eligible population had been offered an NHS Health Check by the end of December 2018, close to the England average but below the schedule to achieve 100% by the end of March 2019 (Figure 42). The proportion that had received a check was below the national average (41%) at 36% and ambition to achieve 50% attendance. The proportion of the eligible population that had received an NHS Health Check within North East local authority populations varied between 21% and 57% (Figure 43).

4.3.   NHS Stop Smoking Services

4.3.1. Activity

In the North East, the average rate of access tof NHS Stop Smoking Services per 100,000 smokers has been maintained over the past five years, while the national average rate of access has fallen (Figure 44). The average rate in the North East is now highest among all nine English regions. The rate is significantly higher than the England average in nine out of twelve North East local authority populations (Figure 45).

Figure 44: Trend in rate of smokers that have successfully quit at 4 weeks per 100,000 smokers aged 16+, North East of England

Source: Risk Factors Intelligence Team, Public Health England

Source: Local tobacco control profiles, Fingertips at fingertips.phe.org.uk, PHE 2019

Area	Recent Trend	Count	Value	
England	–	138,426	2,070	
Yorkshire and the Humber region	–	11,857	1,582	
South East region	–	18,033	1,797	
South West region	–	11,619	1,853	
West Midlands region	–	12,964	1,932	
London region	–	21,224	2,075	
East Midlands region	–	12,793	2,102	
North West region	–	21,553	2,284	
East of England region	–	18,047	2,544	
North East region	–	10,336	2,934	

Figure 45: NHS Stop Smoking Services, smokers that have successfully quit at 4 weeks, average rate per 100,00 smokers 16+ by North East local authority, 2017/18

Compared with benchmark: ■ Better ■ Similar ■ Worse ■ Not compared

Area	Recent Trend	Count	Value		95% Lower CI	95% Upper CI
England	–	138,426	2,070		2,043	2,096
North East region	–	10,336	2,934		2,813	3,061
Redcar and Cleveland	–	695	4,151		3,548	4,865
County Durham	–	2,497	4,038		3,472	4,716
South Tyneside	–	754	3,336		2,902	3,831
Hartlepool	–	454	3,144		2,711	3,618
Stockton-on-Tees	–	739	3,124		2,660	3,677
Northumberland	–	993	2,869		2,463	3,352
Middlesbrough	–	583	2,804		2,429	3,229
Gateshead	–	770	2,794		2,401	3,242
Sunderland	–	1,241	2,386		2,134	2,677
Newcastle upon Tyne	–	868	2,338		1,994	2,738
North Tyneside	–	581	2,094		1,787	2,451
Darlington	–	161	1,293		1,043	1,578

Source: Risk Factors Intelligence Team, Public Health England

Source: Local tobacco control profiles, Fingertips at fingertips.phe.org.uk, PHE 2019

4.4. NHS Diabetes Prevention Programme

4.4.1. Activity

County Durham was the first area in the North East to commission the NHS Diabetes Prevention Programme (NDPP) in 2016. In April 2018 delivery of the NDPP commenced in all other North East CCG areas.

**Table 4: NHS Diabetes Prevention Programme referrals and assessments 2018/19**

Area name	Referrals	Assessments
Northumberland Tyne & Wear North Durham Sustainability and Transformation Partnership area	5,606	2,564
Durham Dales Teesside Easington & Sedgefield Sustainability and Transformation Partnership area	4,785	2,268

Souce: NHS England, 2019

4.5. Prescribing of statins among people at increased risk of future CVD

4.5.1. Activity

Figure 46: Proportion of new hypertension patients 30-74 years at increased risk of CVD treated with statins, 2017/18
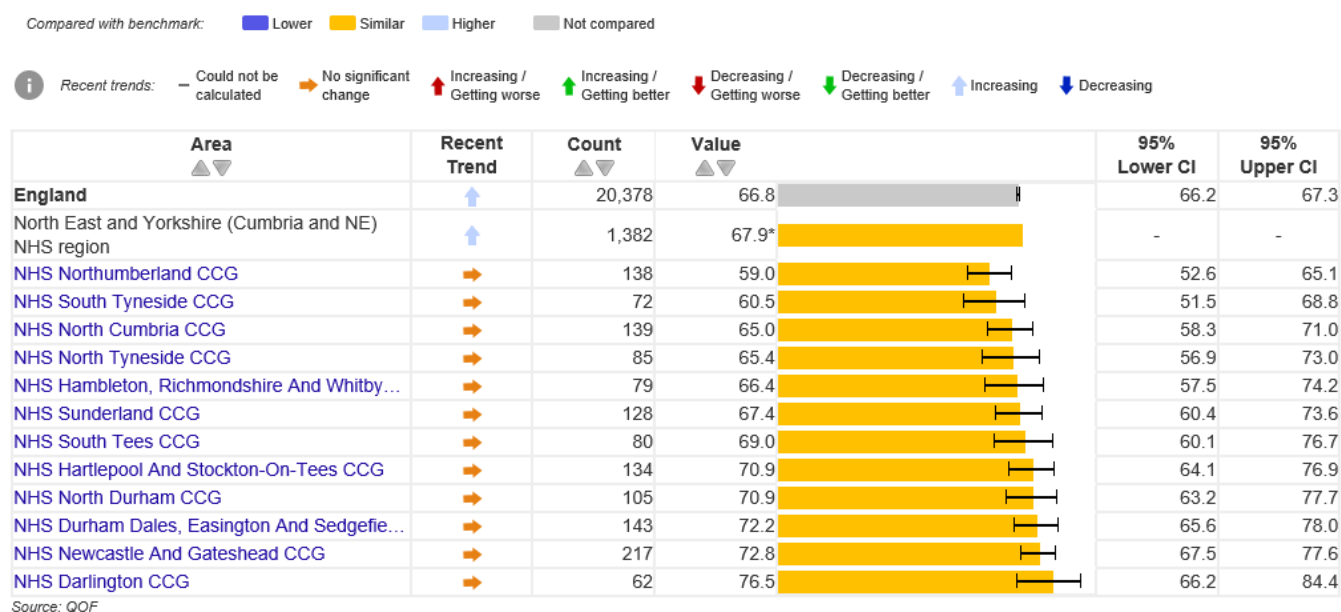
Source: Cardiovascular disease profile, Fingertips at fingertips.phe.org.uk, PHE 2019

The Quality and Outcomes Framework (QOF) measures the proportion of people newly diagnosed with hypertension, aged 30-74 years and with an increased risk of a future CVD event, who are treated with statins to reduce cholesterol. At CCG level, the numbers are quite small meaning that the results don't reveal statistically significant differences from the England average (Figure 46). However this is an important measure to show the proportion of at-risk people being appropriately treated with statins.

4.6. Hospital-based services

In addition to community and primary care-based services that contribute to the prevention of CVD, there are a wide range of high quality hospital-based services in the North East that contribute to the secondary and tertiary prevention of CVD ie preventing or delaying the onset of CVD for high-risk patients, or preventing the progression of disease and supporting people to manage their condition. It is beyond the scope of this report to cover these in detail, but the following are references where further information can be found:

Sentinel Stroke National Audit Programme
National Cardiac Audit Programme administered by the National Institute for Cardiovascular Outcomes Research

5. Conclusions

The fall in the early death rate due to CVD has slowed down since 2008 across England and in the North East region. Over the past 15 years, the gap in this mortality rate between England and the North East has narrowed. However, over the same period, the gap in morbidity rates (including hospital admissions) due to CVD between the North East and England has widened. The gap in the total rate of mortality and morbidity due to CVD has remained constant.

In relation to lifestyle factors that increase the risk of CVD; the proportion of adults that smoke has been falling in the North East of England but is still significantly above the national average, alcohol consumption above recommended limits is more common in the North East, a higher proportion of adults are physically inactive and a higher proportion are overweight or obese compared to national averages.

The stubborn health inequalities gap due to CVD increases the need to ensure that the uptake of cost-effective interventions that can prevent future CVD is maximised and that these interventions are accessed by those whose risk of a future CVD event is greatest. Also, these interventions should be delivered and accessed in proportion to need throughout the North East region.

PHE has recently revised and restated the ambitions for the diagnosis and treatment of atrial fibrillation, high blood pressure and raised cholesterol. Identifying a greater proportion of people at risk of, or who have cardiovascular diseases, and ensuring that they are receiving the best possible evidence-based care will help to further reduce early mortality.

The data which will help understand whether or not progress is being made towards these ambitions are not yet available, but this will change in the next year with the publication of data through the CVDPrevent programme. This data should also give us a greater understanding of characteristics of people accessing the NHS Health Check programme and the resulting outcomes. As a result of this new reporting system GPs, secondary care clinicians and healthcare commissioners should be in a better position to review the effectiveness of our investment in CVD prevention programmes.

Glossary and abbreviations

Glossary

Disability adjusted life years (DALYs)

DALYs can be thought of as one lost year of healthy life. A DALY is the sum of Years of Life Lost due to premature death (YLLs) and Years Lost due to Disability (YLDs).

Years lived with disability (YLDs)

Years lived with any short-term or long-term health loss, weighted for severity of the condition.

Years of life lost (YLLs)

Years of life lost due to premature mortality. In the UK, YLLs are usually calculated by subtracting the age at death (in years) from 74.5 (assuming that deaths within each single year of age are evenly distributed across the year) and summing over all deaths below 75 years of age. Within the Global Burden of Disease study, YLLs are described as the multiplication of deaths and a standard life expectancy at the age of death. The standard life expectancy is derived from a life table that contains the lowest observed mortality rate at each age that has been observed in any population greater than 5 million.

Abbreviations

AF – atrial fibrillation

BALANCE – alcohol campaign office in the North East (www.balancenortheast.co.uk)

BMI – body mass index, calculated as kilogrammes per metre squared (kg/m^2)

CCG – clinical commissioning group

CHD – coronary heart disease

CVD -cardiovascular disease

DALY – disability adjusted life year

DEFRA – Department for the Environment and Rural Affairs

GBD – Global Burden of Disease (a research project led by the Institute for Health Metrics and Evaluation, part of the University of Washington)

GP – general practitioner

HbA1c - glycated haemoglobin (A1c), which identifies average plasma glucose concentration

HDL – high density lipoproteins

HES – hospital episode statistics

ICD10 – 10th International Classification of Diseases (https://www.who.int/classifications/icd/en/)

LDL – low density lipoproteins

mmol – millimole, one thousandth of a mole

mole - the mass of substance containing the same number of fundamental units as there are atoms in exactly 12.000 g of ^{12}C (carbon 12)

NCVIN – National Cardiovascular Intelligence Network

NHS – National Health Service

NHS DPP – NHS Diabetes Prevention Programme

NICE – National Institute for Health and Care Excellence

NO_2 – nitrogen dioxide

ONS – Office for National Statistics

PCN – primary care network

PHE – Public Health England

QOF – quality and outcomes framework

SHAPE – Strategic Health Asset Planning and Evaluation, a web-based mapping tool published by Public Health England (https://shapeatlas.net/place)

SPD – supplementary planning document – provides detailed guidance to show how a Development Plan Document (DPD) applies to a specific type of development

STP – sustainability and transformation partnership

TIA – transient ischaemic attack

WHO – World Health Organisation

YLD – year lived with a disability

YLL – year of life lost

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Annex A: Estimated cost effectiveness of CVD prevention interventions where there is evidence of their efficacy

— interventions achieving a net cost saving over 20 years   — interventions achieving a net loss over 20 years
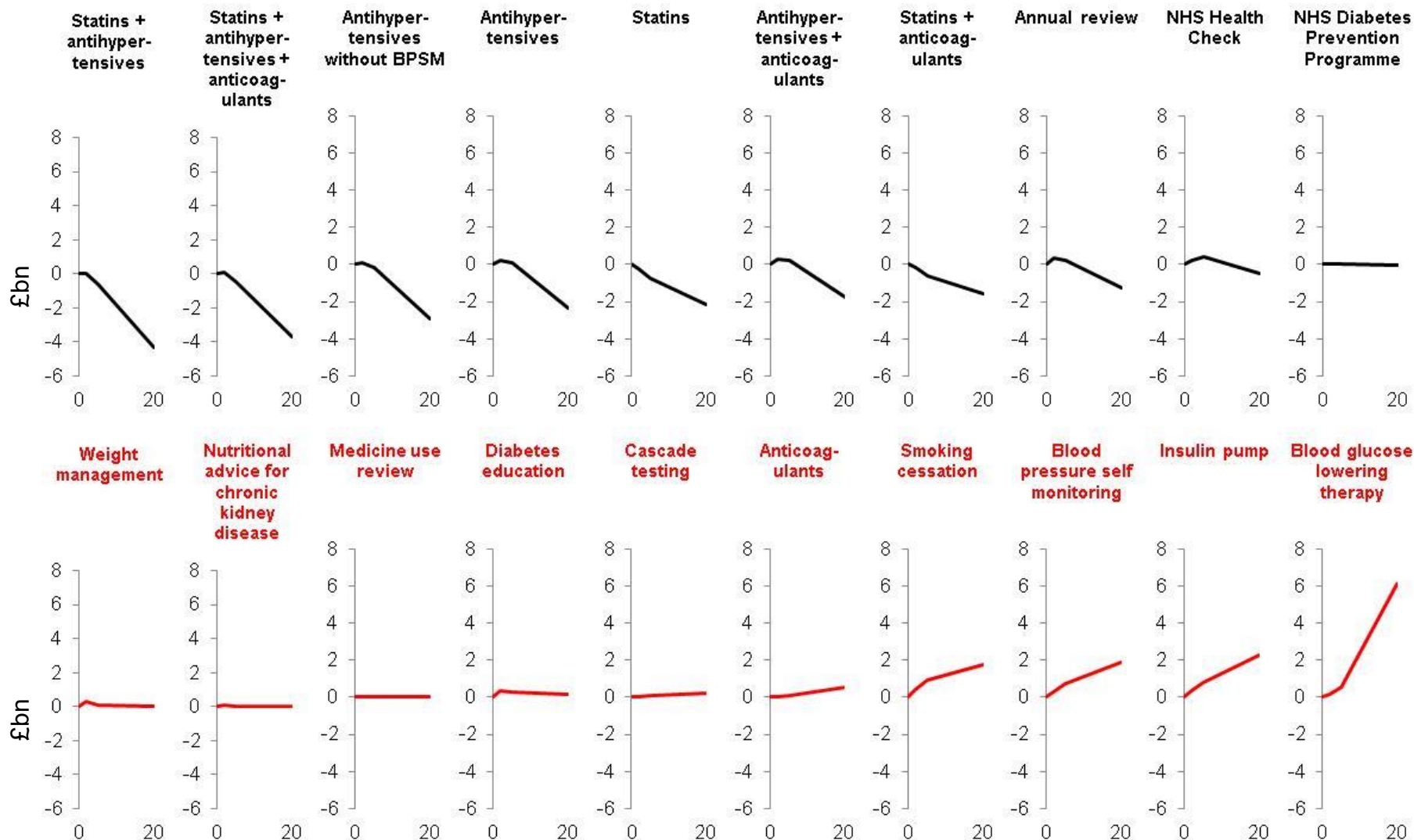
Data source: PHE and Sheffield University, CVD ROI tool: Final report, p22