



**Northamptonshire
Health & Wellbeing Board**

JSNA Report 2013

Cardiovascular disease

Delivering meaningful, healthier, longer lives for the people of Northamptonshire

Introduction

- Cardiovascular diseases affect the blood supply to the heart and other vital organs.
- Cardiovascular disease is an important public health problem in Northamptonshire. It is the second most common cause of death, after cancer.

Key Points

- In most respects, the impact of cardiovascular disease in Northamptonshire is similar to other parts of England.
- Progress is being made in reducing the impact of cardiovascular disease in Northamptonshire. Death rates are falling in line with those elsewhere in the East Midlands and England.
- Northampton's mortality rates from cardiovascular disease are significantly worse than the average for England, while Daventry's, East Northamptonshire's and South Northamptonshire's are significantly better than average.
- About 230,000 people with at least one of coronary heart disease, stroke or hypertension (high blood pressure) in Northamptonshire have not been diagnosed and recorded by their general practitioner, about the same as elsewhere in England. There are substantial differences in the recorded prevalence of coronary heart disease, stroke and high blood pressure between Northamptonshire practices. The poorer the population served by a practice, the greater the under-recording, exacerbating health inequalities.
- More than elsewhere, patients in Northamptonshire have not had their recommended cardiovascular risk assessment and are therefore not receiving risk reduction advice and treatment. Of the 78 practices in the County, a quarter (19 practices) had assessed the risk in fewer than 1% of their eligible registered patients by 30 September 2013, and more than seventy per cent (fifty-six practices) had assessed fewer than ten per cent of their patients.
- Rates of angiography and revascularisation in Northamptonshire are substantially higher than those reported for either England or the East Midlands. Rates of elective cardiac angioplasty in Northamptonshire are significantly higher than regional rates, and an independent investigation has been arranged.
- In Northamptonshire, as elsewhere, socio-economically deprived people are substantially more likely to die from cardiovascular disease than more affluent groups. However, deprived people in Northamptonshire are obtaining more access to health care, in proportion to their higher levels of needs.
- Compared with similar clinical commissioning groups (CCGs), Nene has high rates of hospital care for cardiovascular disease and higher expenditure. Modelling indicates that Nene CCG could reduce mortality from cardiovascular disease by 81 lives a year by improving its approach to cardiovascular disease. The modelling also suggests that £8m could also be saved from the CCG's spending on cardiovascular services, more than in the other clinical areas considered. Prescribing costs could be reduced by £900,000. The modelling assumes that Nene is similar to its assigned peer group, whereas it is in fact one of the most deprived members of the comparator group. This may make the comparison unreliable.
- Corby CCG's rates of, and spend per head on, elective and day case admissions for cardiovascular disease are the highest in England; its rates of, and spending on, all

secondary care admissions for this indication are fourth highest. Its rate of elective and day case admissions is more than twice the England average. The modelling indicates that Corby CCG is capable of saving £1.4m from its cardiovascular services budget. It is not clear how much the high use of angioplasty in Kettering influences these results or whether there are more systematic drivers of overuse of cardiovascular services.

- We were not able to obtain information about the prevention of cardiovascular disease within the timescale of this project.

Recommendations

- We recommend that Northamptonshire develops a strategy on healthy eating. This could include:
 - restricting planning permission for take-aways and other food retail outlets in specific areas, for example, within walking distance of schools
 - ensuring publicly funded venues provide a range of affordable healthier options
 - encouraging venues frequented by children and young people and supported by public money to resist sponsorship or product placement from companies associated with foods high in fat, sugar or salt
 - providing only healthy food via publicly funded outlets
 - encouraging workplaces and employers to offer and promote access to healthy foods and beverages.
 - promote brief interventions in health and educational settings, ensuring that interventions are culturally diverse and sensitive to a broad range of dietary requirements.
- We also recommend a strategy on physical activity. This could include the following areas for action:
 - *leadership*: promote the importance of encouraging physical activity as part of all council portfolios, ensure physical activity is a key priority when developing local authority programmes and targets, explain to the public the local authority's role in promoting physical activity.
 - *policy*: promote the benefits of physical activity and encourage participation creating an environment which encourages physical activity, build physical activity into the planning process, promote access by foot and cycle, promote physically active and sustainable travel.
 - *commissioning*: develop exercise referral programmes, promote community walking and cycling schemes, ensure brief advice on physical activity is incorporated into care pathways.
- Primary care services should improve their approach to the identification and management of people at increased risk of cardiovascular disease. There are two key elements to this:
 - *Accelerating the roll-out of the NHS Health Check*: Whatever the reasons for the delayed start to NHS Health Check in Northamptonshire, it has disadvantaged people at increased risk and allowed their disease to progress further without risk factor

modification. Northamptonshire County Council is required to ensure that all eligible residents have been invited for NHS Health Check by April 2018, which will require an acceleration in the present rate of progress.

Working with partners in NHS England, the clinical commissioning groups and primary care, the County Council should consider how rates of invitation could be increased. This might include

- using outreach workers to directly engage with vulnerable communities
- delivering NHS Health Check directly in deprived areas, rather than via primary care
- working with a broader range of community providers such as pharmacies, voluntary and community organisations that have a presence among more disadvantaged communities
- ensuring that NHS Health Check materials are translated and culturally relevant
- ensuring relationships and links are developed with community and faith groups
- examining innovative delivery methods such as health buses.

Four Northamptonshire practices have already provided more than a third of their registered patients a cardiovascular risk assessment; understanding how they have achieved such early success will be useful for the others.

- Improving rates of clinical diagnosis, recording and risk management in primary care: PHAST's analysis indicates that 230,000 people with clinical conditions that increase their risk of serious cardiovascular events remain undiagnosed or unrecorded by primary care systems in Northamptonshire, with the result that their risk cannot be addressed and modified. Those responsible for the quality of primary care services in the County should work with NHS England and the CCGs to improve practices' performance so that the majority perform as well as the best. Much of this will follow from successful implementation of NHS Health Check and a rigorous and methodical approach to using the information it provides.
- Our analysis of hospital services was constrained by the limited data available on services available and the consequent costs. The available information indicates that activity is broadly in line with population needs and is equitable, but a more granular analysis would be appropriate, using programme budgeting techniques. It may be that Northamptonshire's CCGs have already reviewed their patterns of investment and identified opportunities to use the available resources better, though they are new organisations and may not yet have had time to undertake this. Some of our contacts indicated that a more comprehensive review of the commissioning of cardiovascular services was planned for 2014, and we commend this.

Key early priorities are:

- Accelerating the roll-out of the NHS Health Check
- Improving rates of clinical diagnosis, recording and risk management in primary care.

This needs assessment should be read in conjunction with the reports on smoking, obesity and diabetes.

Why is cardiovascular disease important in Northamptonshire?

Cardiovascular diseases affect the blood supply to the heart and other vital organs. The most important types of cardiovascular disease are

- Coronary heart disease, which occurs when the blood vessels supplying the heart become narrowed. This can lead to heart attacks, heart failure and angina.
- Stroke, which occurs when the blood supply to the brain is disrupted. This can lead to difficulties with movement and speech.
- Vascular disease elsewhere, for example in the legs. This can cause pain on walking or at rest, and infection. This topic is not considered in detail here.

Cardiovascular disease is an important public health problem in Northamptonshire. Coronary heart disease and stroke are common, and people affected by them often experience substantial reductions in their health and quality of life. Cardiovascular disease is the second most common cause of death, after cancer. Almost a third of deaths are caused by cardiovascular disease, a total of 130,000 in England in 2011. Of these, almost half are from coronary heart disease and almost a fifth from stroke.

Local strategic documents do not refer to cardiovascular disease. *In Everyone's Interest*, Northamptonshire's Health and Wellbeing Strategy 2013-16, does not mention cardiovascular disease specifically, though one of the document's three strategic outcomes is that "people have healthier lifestyles and exert greater control over their health and wellbeing". Of the strategy's five priorities, reducing levels of childhood obesity will eventually contribute to a reduction in cardiovascular disease. Neither Corby Clinical Commissioning Group (CCG)'s document *Shaping Healthcare Services in Corby 2013/14* nor Nene CCG's *Top Priorities* mentions cardiovascular disease.

What is the local picture?

Figure 1 summarises data about cardiovascular disease in Northamptonshire. In most respects, it shows that Northamptonshire is similar to other parts of England, with no differences in

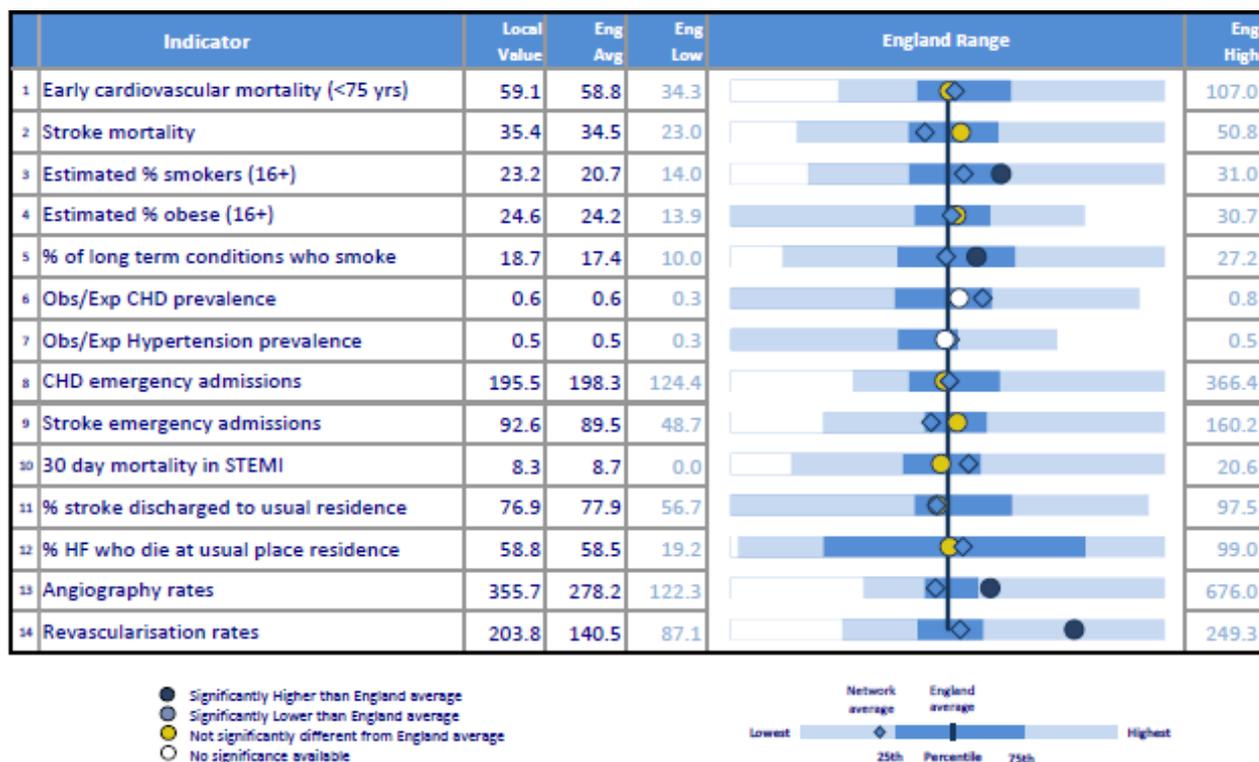
- premature cardiovascular mortality
- stroke mortality
- the estimated prevalence of obesity
- the ratio of observed to expected numbers of people with coronary heart disease and with hypertension. These are measures of completeness of diagnosis in primary care and indicate that rates of under-diagnosis of these two conditions in Northamptonshire are high: of every ten people with coronary heart disease, four are not recorded as having the diagnosis in their primary care records. For hypertension, one in two people with the diagnosis are not recorded. The differences between the observed prevalences of coronary heart disease, stroke and hypertension (high blood pressure) are shown in Figure 5. These differences, while large in Northamptonshire, are not exceptional.

- the rate of emergency admissions with coronary heart disease and stroke
- mortality after severe myocardial infarction. A high rate might suggest deficiencies in the quality of treatment locally.
- the proportion of people with stroke discharged to their usual residence. A low proportion might suggest deficiencies in the quality of local treatment, especially rehabilitation.
- the proportion of deaths from heart failure which occur at home. Because severe heart failure is usually treated palliatively, many patients will be at home when they die. A low proportion of deaths at home might suggest inadequate palliative care and a tendency for inappropriate admission.

The following data are significantly different in Northamptonshire compared with England:

- The estimated number of smokers. This estimate was based on the Integrated Household Survey for 2010/11, which reported a prevalence of 23.2% in Northamptonshire. The Survey for 2011/12 reported a local prevalence of 20.9%, similar to the England average.
- The proportion of people with long-term conditions who smoke. This figure is derived from Quality and Outcomes Framework data but may also be affected by the higher prevalence of smoking reported in 2010/11 than 2011/12.
- Rates of angiography and revascularisation. These are substantially higher than those reported for either England or the East Midlands, with the revascularisation rate a marked outlier. This is discussed further below.

Figure 1: Summary of data on cardiovascular disease in Northamptonshire, 2006/2008 to 2011/12



Source: [Public Health England](#)

The data items are from separate years, but most are 2011/12. Details are [here](#).

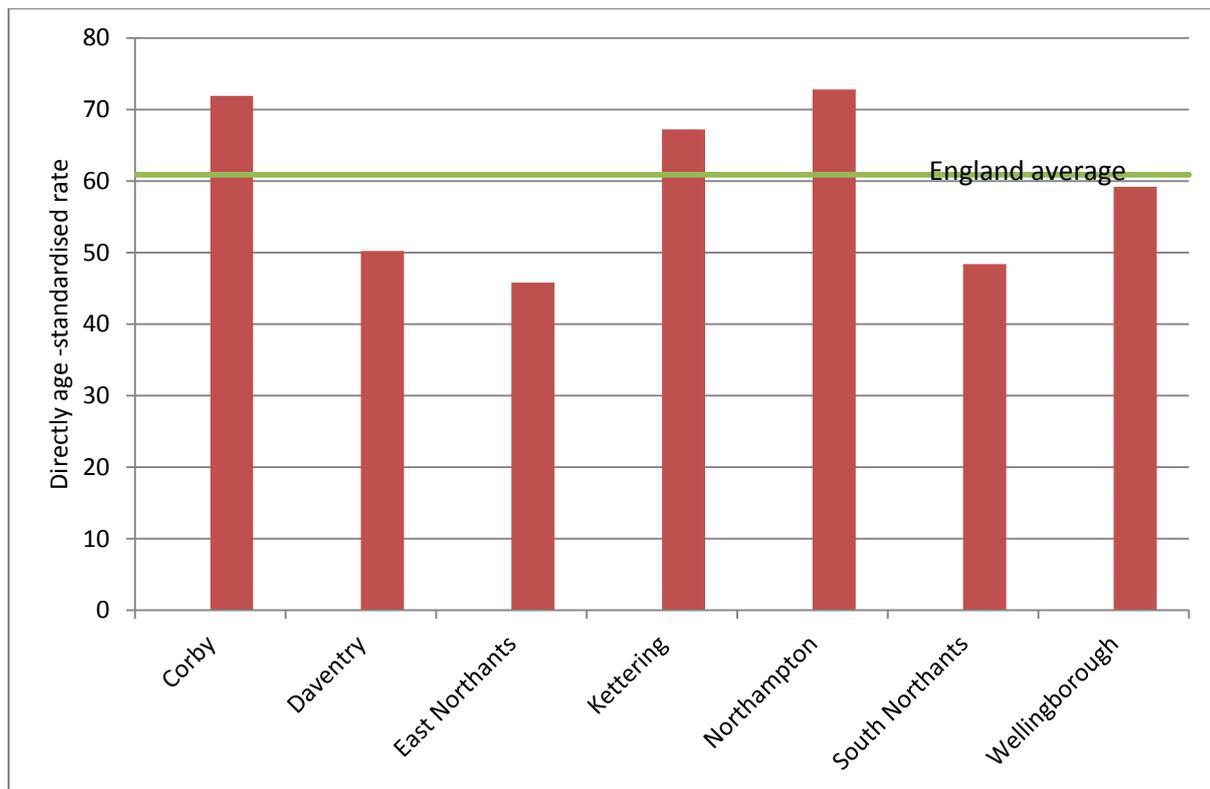
Mortality

Mortality from cardiovascular disease is about as common in Northamptonshire as in England as a whole. [In 2009 to 2011, the age-standardised death rate from cardiovascular disease in the County was 151 per 100,000 per year, similar to the rates for England \(156 per 100,000\) and for the East Midlands \(158 per 100,000\).](#)

Death before age 75 years is considered premature. [The mortality rate from cardiovascular disease before that age in Northamptonshire is 59.1 per 100,000, similar to the England average of 58.8 per 100,000.](#)

Figure 2 shows rates of premature death from heart disease and stroke in districts and boroughs in Northamptonshire. The highest rates are in Northampton and Corby, closely followed by Kettering, while the lowest rates are in East Northamptonshire. Northampton's rates are significantly worse than the average for England, while Daventry's, East Northamptonshire's and South Northamptonshire's are significantly better than average for England.

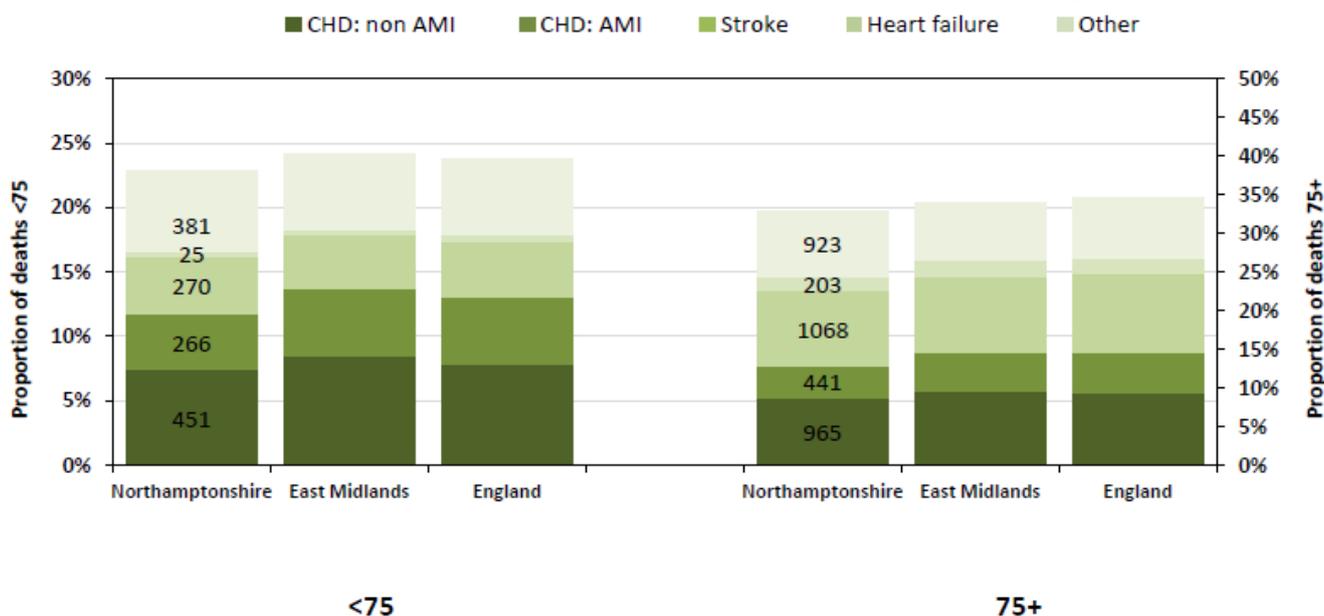
Figure 2: Mortality from heart disease and stroke, district councils in Northamptonshire, 2009-2011



Source: [Public Health England](#)

Cardiovascular disease is a slightly smaller component of death at all ages in Northamptonshire than in England as a whole (Figure 3). [In the County, cardiovascular deaths accounted for 23% of deaths under 75 years and 33% for people aged 75 and above. In England, the corresponding proportions are 24% for under 75s and 35% for those aged 75 and over.](#)

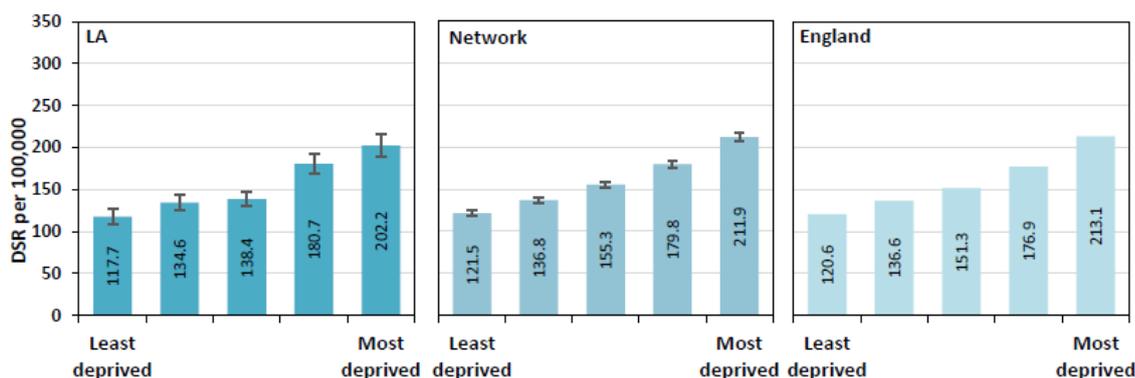
Figure 3: Deaths from cardiovascular disease as a proportion of all deaths, under 75 years and 75 years and over, Northamptonshire, East Midlands and England, 2009-11



Source: [Health and Social Care Information Centre, PHO annual deaths extract, Office for National Statistics](#)

Figure 4 shows mortality from cardiovascular disease in sections of the population with different levels of deprivation. There is a marked gradient, with socio-economically deprived people being substantially more likely to die from cardiovascular disease than more affluent groups, after adjustment for age. The people who live in the most deprived areas of Northamptonshire have a death rate from cardiovascular disease 1.3 times greater than the average for Northamptonshire and 1.7 times greater than those who live in the least deprived areas of the County. These gradients are of similar steepness in Northamptonshire to those in the East Midlands and England as a whole.

Figure 4: Cardiovascular mortality rates by deprivation quintile, England, East Midlands (network) and Northamptonshire (LA), 2009-2011



Source: [PHO annual deaths extract, Office for National Statistics, Department of Communities and Local Government](#)

Prevalence of risk factors

The prevalences of risk factors for coronary heart disease in Northamptonshire are similar to that elsewhere in the East Midlands and England (Table 1).

Table 1: Prevalences of cardiovascular risk factors, Northamptonshire, East Midlands and England, 2006/8, 2008/9 and 2011/12

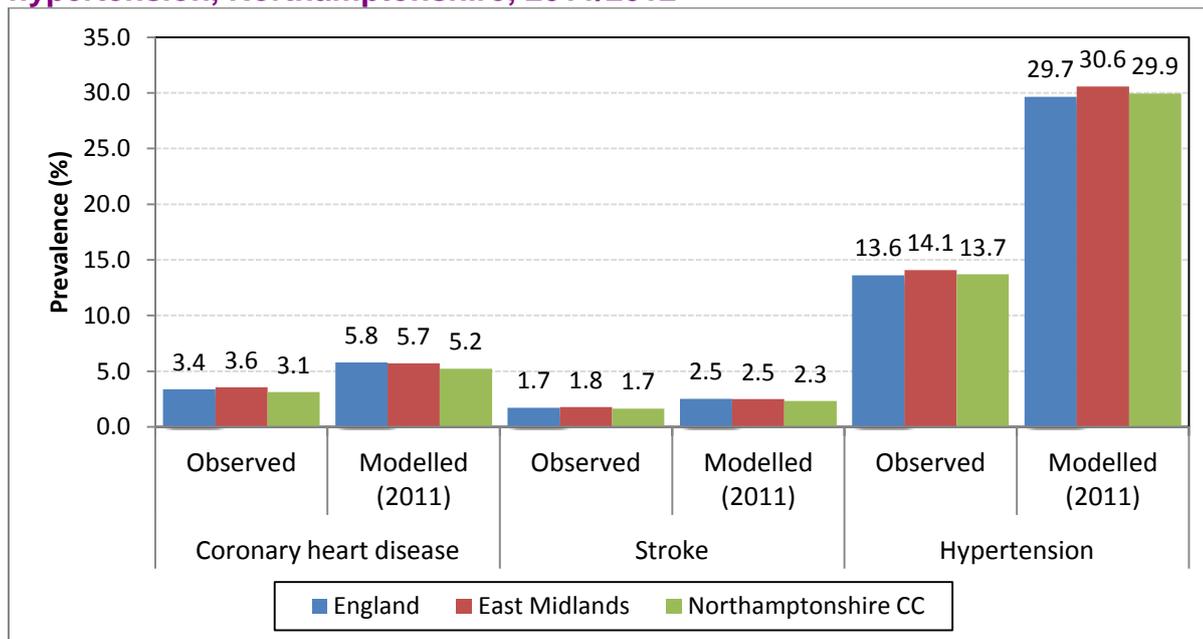
	Smoking (%)	Increased or high drinking (%)	Obesity (%)
Northamptonshire	20.9	22.8	24.6
East Midlands	19.8	22.5	24.4
England	20.0	22.3	24.2

Sources: [Smoking: Integrated Household survey 2011/12](#)
[Drinking: Modelled estimates from the General Lifestyle Survey 2008/9](#)
[Obesity: Modelled estimates from the General Household Survey 2006/8](#)

Treatment of coronary heart disease, stroke and hypertension (high blood pressure) reduces the risk of future cardiovascular events, but can only occur in patients in whom the disease has been diagnosed. By comparing the observed prevalence of these diagnoses in primary care with what would be expected on the basis of research elsewhere, we can gauge the completeness of case ascertainment, a marker of the quality of primary care.

In Northamptonshire in 2011/12, 22,338 people are recorded by their general practitioner as diagnosed with coronary heart disease, an apparent prevalence of 3.1%. This is 60% of the estimated true prevalence, similar to the reported figures of 58% for England and 62% for East Midlands. The observed prevalence for stroke in Northamptonshire is 71% of the estimated true prevalence, similar to the reported figures of 68% for England and 71% for East Midlands. For hypertension, the observed prevalence in Northamptonshire is 46% of the estimated true prevalence, the same as for England and for the East Midlands. While indicating that local performance is no worse than elsewhere, these results leave considerable room for improvement; general practitioners in the best performing local authority in England had diagnosed 80% of the expected number of patients with coronary heart disease. These results are illustrated in Figure 5.

Figure 5: Observed and modelled prevalences of coronary heart disease, stroke and hypertension, Northamptonshire, 2011/2012



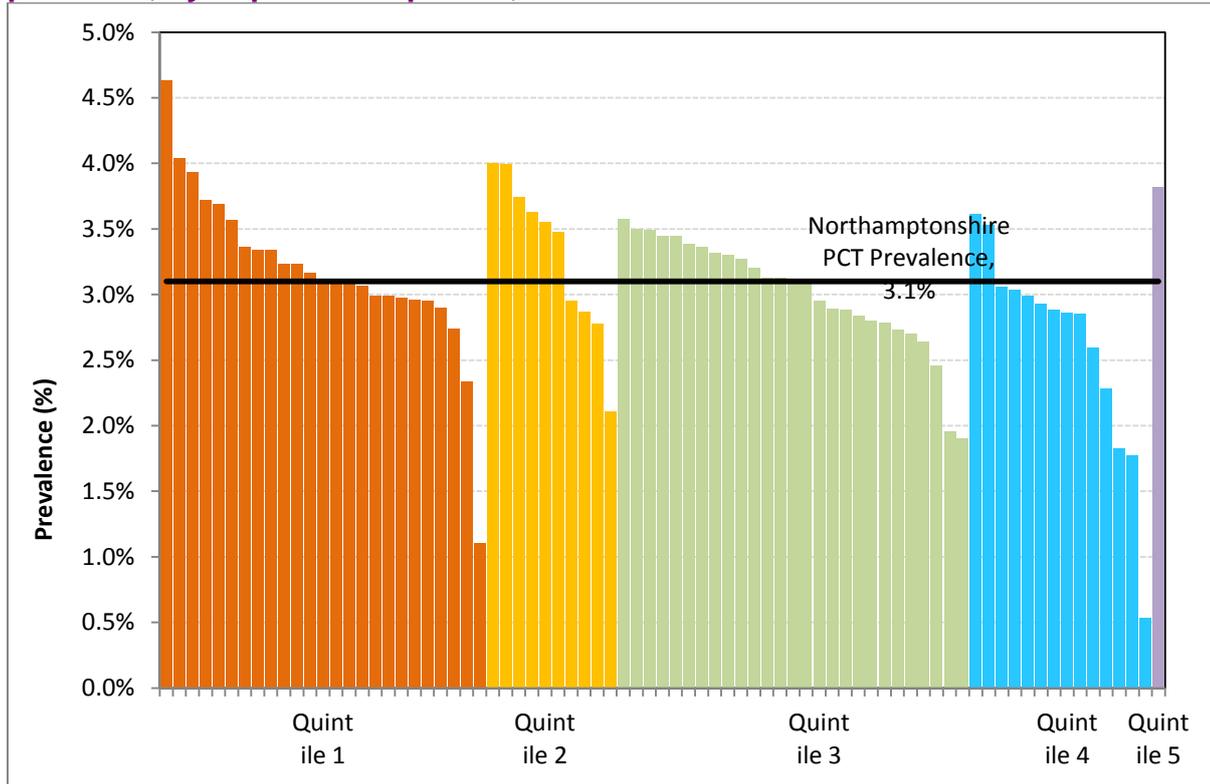
Source: [Public Health England](#) and [Northamptonshire quality and outcomes framework](#)

Figure 6 shows the prevalence of diagnosed coronary heart in each practice in Northamptonshire, with the practices grouped into deprivation quintiles for England. Practices in quintile 1 serve populations in the most affluent fifth of the English population, while only one practice in Northamptonshire serves a population in the most deprived quintile.

Several important findings emerge from Figure 6:

- There are substantial differences in the recorded prevalence of coronary heart disease in Northamptonshire practices. The highest recorded prevalence is one patient in twenty-one, the lowest is one in two hundred. These prevalences are unstandardised – in other words they have not been adjusted for differences in the age and sex composition of different practices, so some variation is to be expected. Practices serving a younger population would naturally have a lower prevalence of most long-term conditions. However, the average ages of practices' registered populations do not vary substantially enough to explain the low prevalences reported by some practices. It is likely that these practices are not diagnosing, or not accurately recording, the presence of coronary heart disease in their registered patients.
- Coronary heart disease is more common in socio-economically deprived people, so we would expect to find a higher reported prevalence in lower quintiles in Northamptonshire. In fact, the opposite trend is seen, with the top four quintiles having average prevalences of 3.2%, 3.3%, 3% and 2.6%; the lowest quintile contains only one practice and so its results may not be representative. This suggests that under-diagnosis and recording of coronary heart disease is more common in practices serving poorer people, exacerbating the health disadvantages that they already experience.
- These results are against a background in which only six out of ten Northamptonshire residents with coronary heart disease are diagnosed (Figure 5), so even practices with higher recorded prevalences are likely to have a substantial number of undiagnosed or unrecorded patients with the disease.

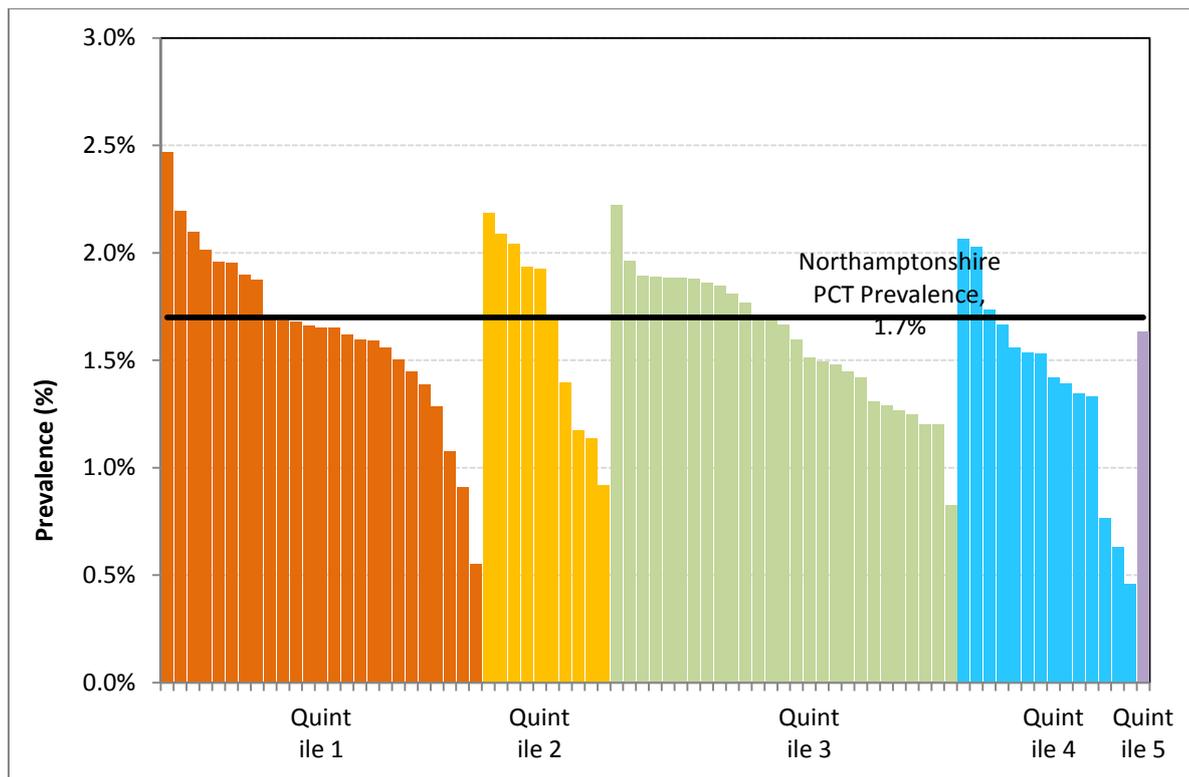
Figure 6: Recorded prevalence of coronary heart disease, Northamptonshire general practices, by deprivation quintile, 2012/13



Source: [Northamptonshire quality and outcomes framework](#)

Figure 7 shows Northamptonshire practices' recorded prevalences for stroke and transient ischaemic attack. Here again there are large and unexplained variations in apparent prevalence, which are likely to be due in large measure to under-diagnosis and under-recording.

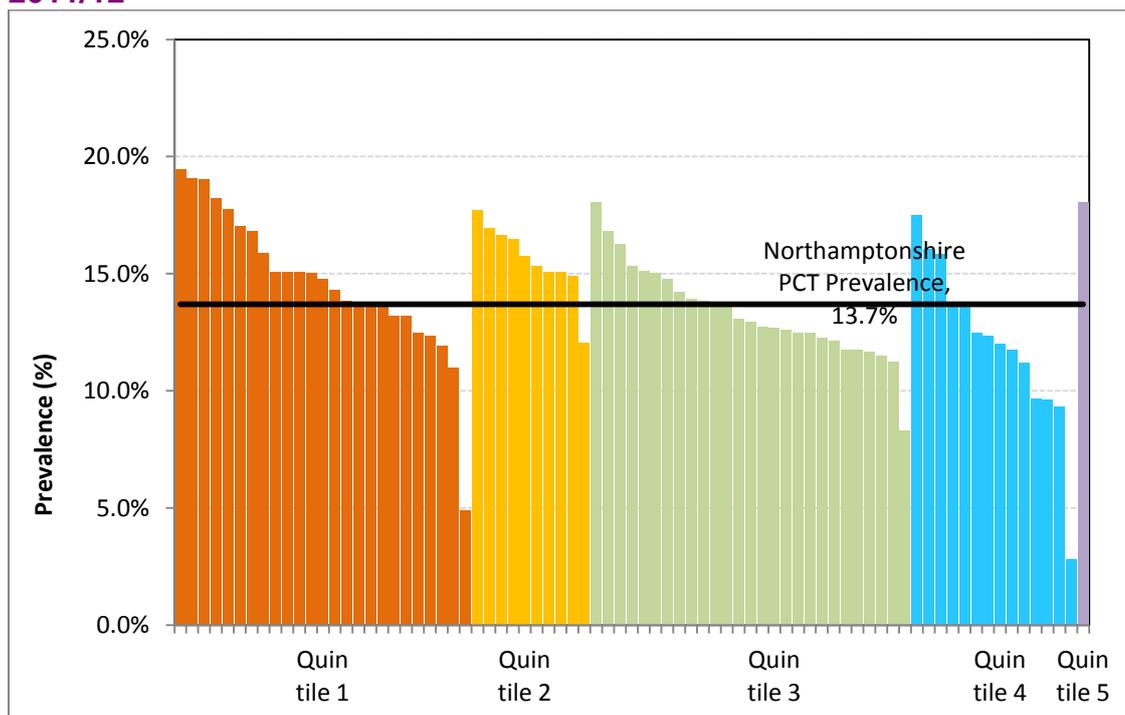
Figure 7: Recorded prevalence of stroke and transient ischaemic attack, Northamptonshire general practices, 2011/12



Source: [Northamptonshire quality and outcomes framework](#)

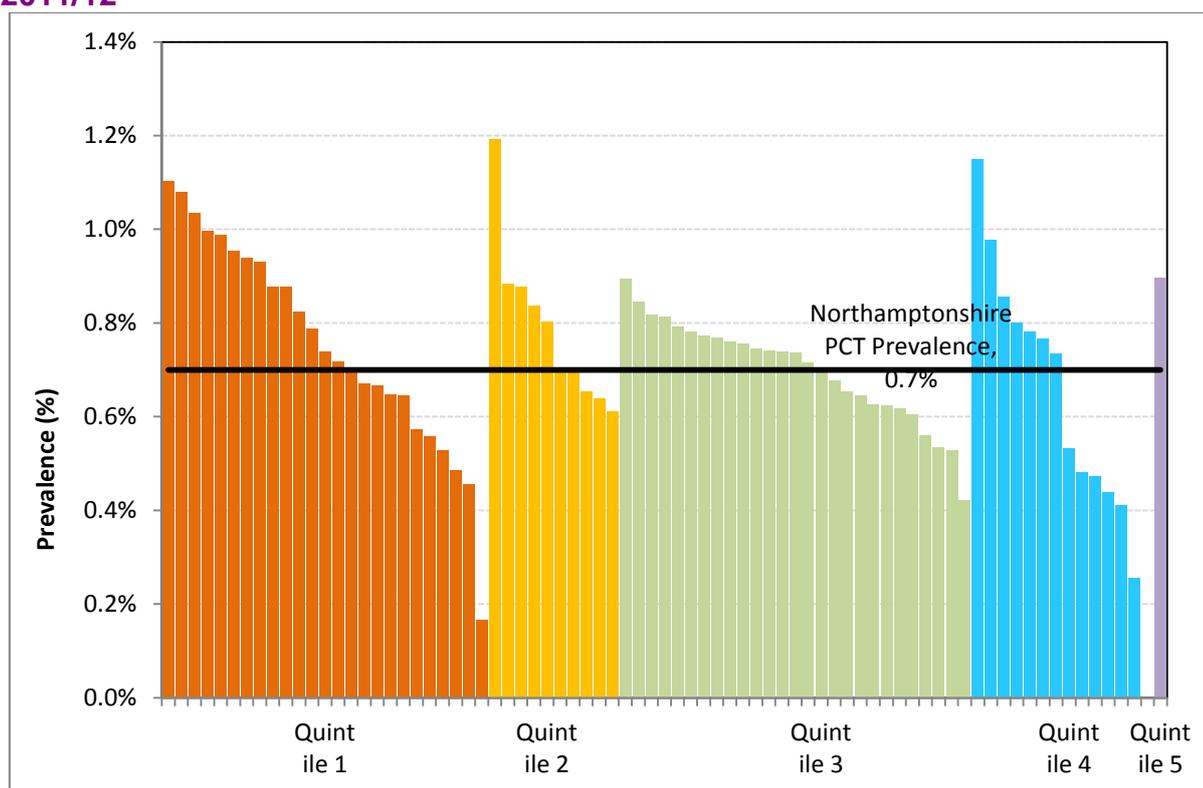
Similar variation is seen with hypertension (Figure 8) and heart failure (Figure 9).

Figure 8: Recorded prevalence of hypertension, Northamptonshire general practices, 2011/12



Source: [Northamptonshire quality and outcomes framework](#)

Figure 9: Recorded prevalence of heart failure, Northamptonshire general practices, 2011/12



Source: [Northamptonshire quality and outcomes framework](#)

In all these cases, some practices have succeeded in identifying patients with the condition, whereas others have substantial numbers whom they have not diagnosed or not correctly recorded. Under-diagnosis matters because unless patients' health problems are correctly recognised and recorded, they cannot be offered appropriate care, including treatments which would reduce the risk of future health problems. So current arrangements prevent patients receiving the treatment and support that they need, including advice and medications to prevent the disease progressing. This leads to avoidable progression of disease with consequent health and social care costs.

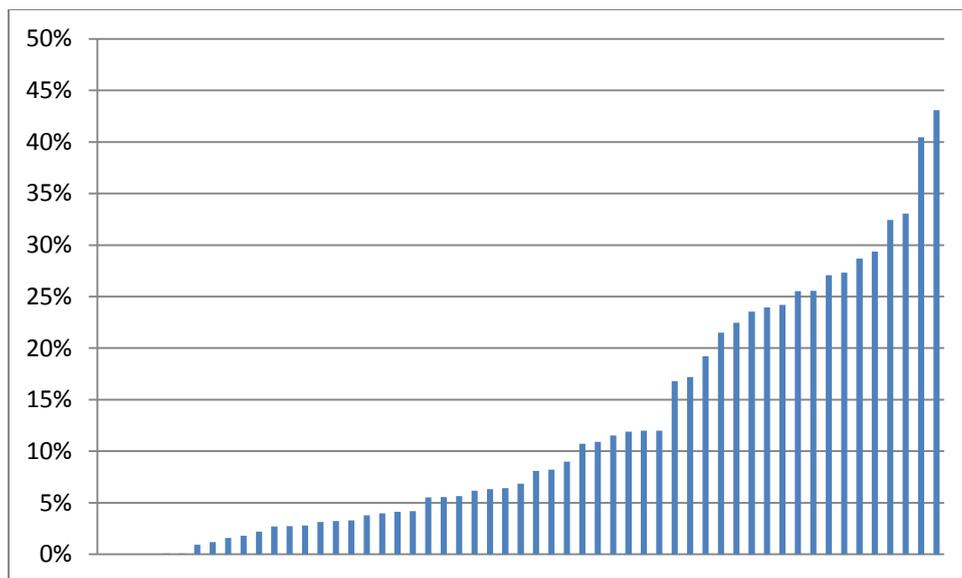
These figures indicate that about 15,100 people in Northamptonshire have coronary heart disease but are not recorded with the diagnosis on by their general practitioner. The corresponding figures for stroke and hypertension are 16,000 and 213,900 respectively. We cannot estimate the health improvement from identifying and treating these patients without information on the severity and prognosis of their specific clinical condition; a few of them may in any case be diagnosed and treated but inaccurately recorded in primary care information systems. However, the numbers involved indicate that the impact of more complete diagnosis would be substantial.

Reducing cardiovascular risk

General practices can estimate the risk of cardiovascular disease in their patients. They can then offer advice and medication to reduce the risk. This may be carried out as part of the [NHS Health Check](#). Figure 10 shows the proportion of patients aged 40 to 74 years registered with Northamptonshire practices who have had this estimate carried out since the programme started in April 2012.

A few practices have done very well, with four already recording cardiovascular risk in more than a third of their eligible registered patients. But this is unusual; overall, the results show that Northamptonshire has not made a prompt start. Of the 78 practices in the County, a quarter (19 practices) had assessed the risk in fewer than 1% of their eligible registered patients by 30 September 2013, and more than seventy per cent (fifty-six practices) had assessed fewer than ten per cent of their patients. As a result, many patients who could benefit from cardiovascular risk assessment and risk reduction are missing out. The delivery of risk assessment needs to improve so patients with higher risk are identified and helped to reduce it.

Figure 10: Proportion of registered patients aged 40 to 74 years with cardiovascular risk estimation recorded, Northamptonshire practices, April 2012 to September 2013



Source: Northamptonshire quality and outcomes framework
Practices with incomplete returns excluded

Figure 11 shows the proportion of eligible patients invited for the NHS Health Check by July 2013 in each local authority in England. Northamptonshire ranks in the lowest 10%. The County's results are worse than in neighbouring local authorities. In [Leicestershire](#), 6% of people had been offered an NHS health check by July 2013, in [Peterborough](#) 6.8% had been and in [Milton Keynes](#) 5.6% had been. In [Northamptonshire](#), the figure was 1.7%. The average for [England](#) is 3.9%, more than twice that in Northamptonshire.

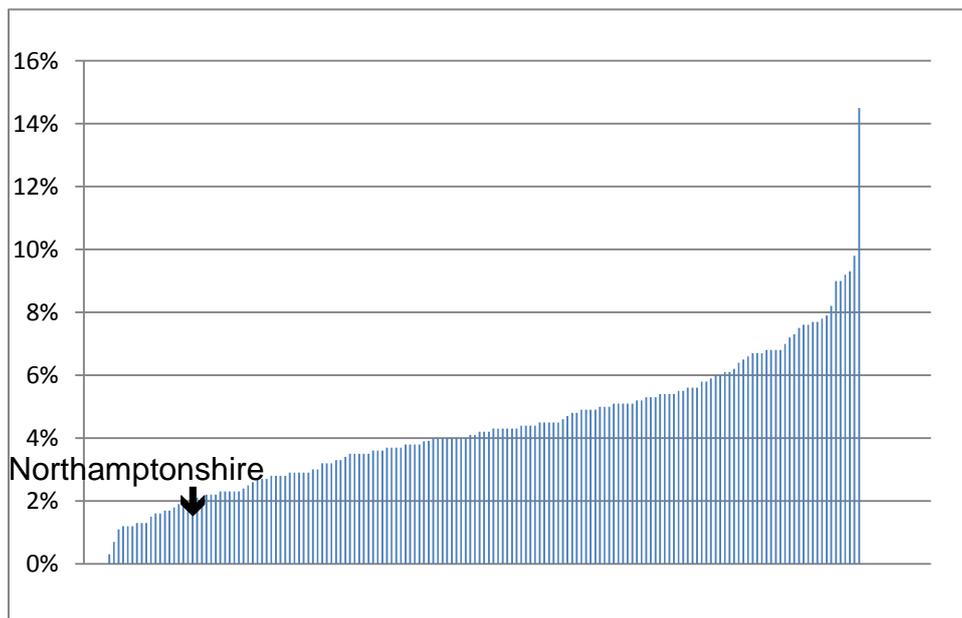
[NHS modelling](#) indicates that full implementation of the NHS Health Check in Northamptonshire would have the following benefits:

- 1,920 additional people would complete a weight loss programme
- 1,074 additional people would be taking statins to reduce their blood cholesterol levels
- 494 additional people would be compliant with an impaired glucose regulation lifestyle
- 269 additional people would be diagnosed with diabetes
- 792 additional people would be have their high blood pressure treated
- 643 additional people would have their chronic kidney disease diagnosed
- 489 additional people would increase their physical activity
- 36 additional people would quit smoking.

Taken together, these changes would produce a gain of 3,656 quality-adjusted life-years¹ for the patients who participated each year. The estimated cost per quality-adjusted life-year is £1900. This represents excellent value for money. The programme consumes resources initially but is cost saving over twenty years.

Local authorities are required to invite all of their eligible population by April 2018, which will require an acceleration of the current rate of progress. There are about 216,000 Northamptonshire residents eligible for NHS Health Check, of whom nearly 19,000 had been offered a check by July 2013. So, about 40,000 patients per year will need to be offered the checked to achieve the target.

Figure 11: The proportion of eligible patients offered an NHS Health Check appointment by July 2013, local authorities, England



Source: [Public Health England](#)

There may also be checking patients' pulses for atrial fibrillation as an additional element of the Health Check.

Hospital admissions

Admissions because of cardiovascular disease are common in Northamptonshire. In 2011/12, there were [1,761 emergency admissions](#) for coronary heart disease in the County, a rate of 196 per 100,000. This is similar to the rates for England (198 per 100,000) and for the East Midlands (199 per 100,000). Male coronary heart disease emergency admission rates are significantly higher than female CHD emergency admission rates.

¹ The quality-adjusted life year is a measure of the health impact of an intervention. It arises when a person lives a year in perfect health.

In 2011/12, the emergency admission rate for stroke in Northamptonshire was [93 per 100,000](#); there were 921 admissions. This is similar to the rate for England (90 per 100,000) and significantly higher than that for the East Midlands (84 per 100,000).

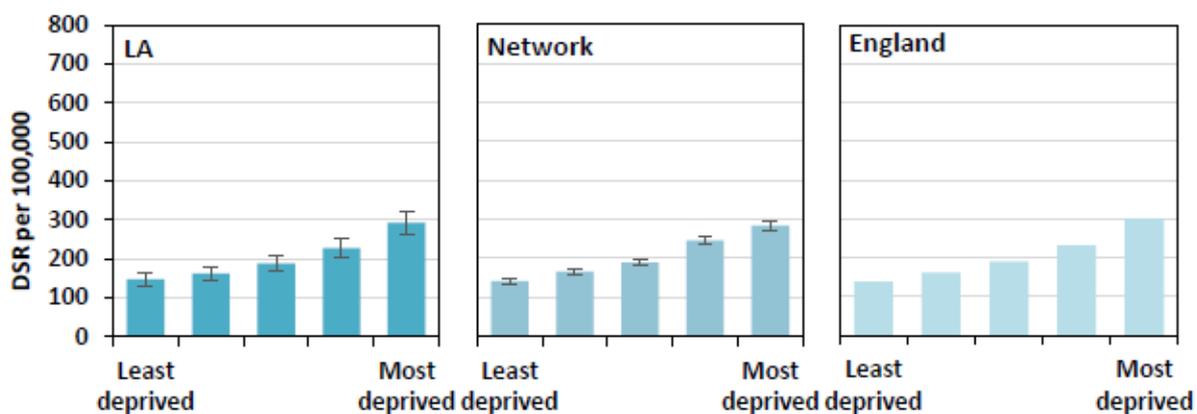
What inequalities are there in health status and access to services?

Cardiovascular mortality rates in men are higher than in women. In Northamptonshire, the annual rates are 187 per 100,000 in men and 120 per 100,000 in women.

Coronary heart disease is more common in socio-economically deprived communities, so we would expect emergency admissions with coronary heart disease to occur more often in people from such communities. This is true for England and the East Midlands as a whole, where the most deprived quintile has an admission rate about twice that of the least deprived (Figure 12). The same trend is also seen in Northamptonshire. Risk of stroke is also strongly associated with socio-economic deprivation, and Figure 13 shows that admission rates for stroke are as well.

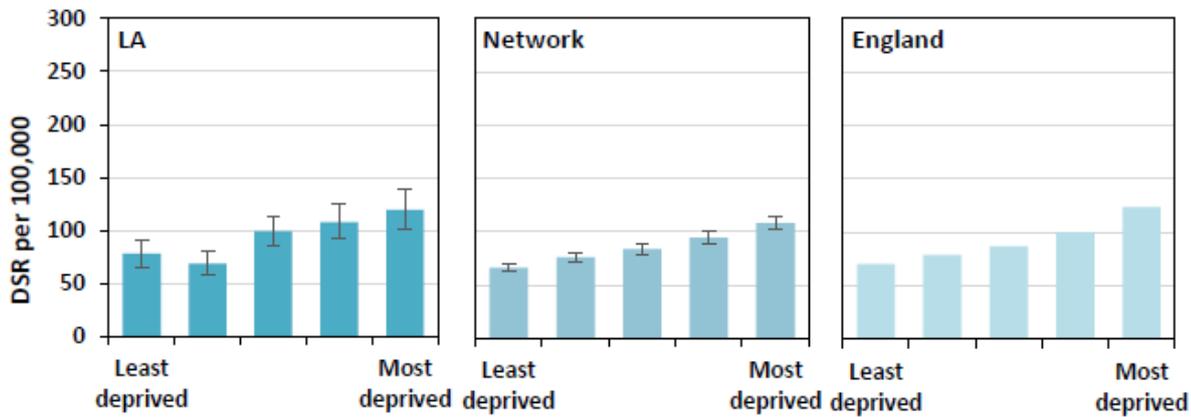
The ratio of emergency coronary heart disease admission rates between the most and least deprived quintiles in Northamptonshire is 1.98, while the ratio of mortality from cardiovascular disease is 1.73 (Figure 4). These similar values are a reassuring indication that deprived people in Northamptonshire are obtaining more access to health care in proportion to their higher levels of needs.

Figure 12: Age-standardised emergency admission rates for coronary heart disease by quintile of relative deprivation, Northamptonshire (LA), East Midlands (Network) and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS, Department of Communities and Local Government \(DCLG\)](#)

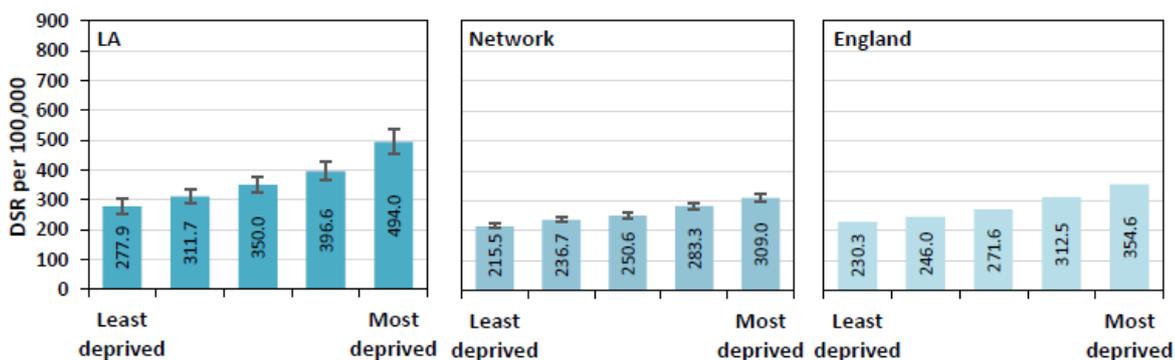
Figure 13: Age-standardised emergency admission rates for stroke by quintile of relative deprivation, Northamptonshire (LA), East Midlands (Network) and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS, Department of Communities and Local Government \(DCLG\)](#)

Figure 14 shows the rates of angiography according to the level of deprivation of locality where the patient lives. Angiography is a procedure used to investigate coronary heart disease, and therefore it should be used more often in people of lower socio-economic status. These results for Northamptonshire are also reassuring: angiography rates for people from the most deprived parts of the County are 1.8 times higher than in those from the most affluent parts. Wealthier people are more likely to have a procedure privately, which would not be counted in this analysis, so the true gradient for all procedures performed is less steep than it appears in these figures. This is also proportionate to the ratio of mortality mentioned above and is a steeper gradient than that observed in England as a whole, where the ratio is 1.5 times, and in the East Midlands, where it is 1.4 times.

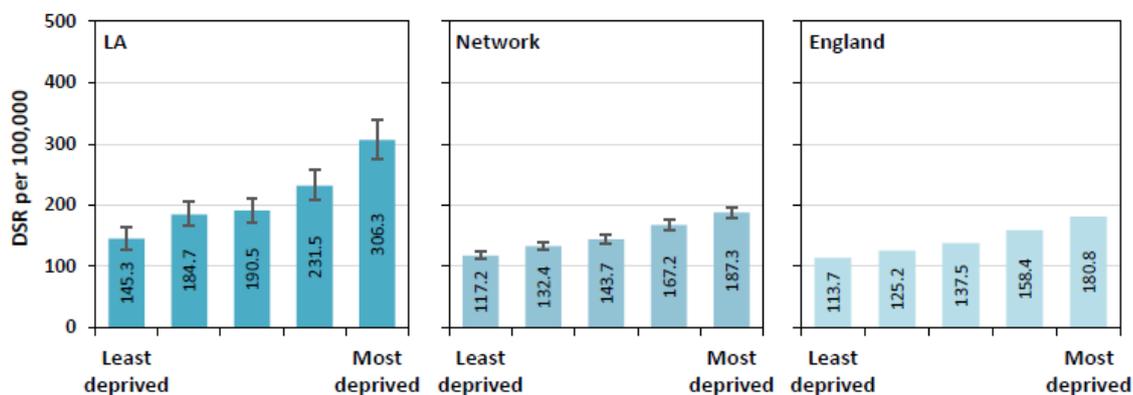
Figure 14: Age-standardised rates of coronary angiography by quintile of relative deprivation, Northamptonshire (LA), East Midlands (Network) and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS, Department of Communities and Local Government \(DCLG\)](#)

Patients with abnormal angiograms are often offered a coronary revascularisation procedure to improve the blood supply to the heart. Access to this procedure should also therefore reflect the socio-economic gradient seen in coronary heart disease, with higher rates in poorer people. Figure 15 shows a steep gradient for revascularisation rates in Northamptonshire, which are 2.1 higher in people from the most deprived areas than they are in the least deprived. This compares with the ratios of 1.6 observed in England and in the East Midlands.

Figure 15: Age-standardised rates of coronary revascularisation by quintile of relative deprivation, Northamptonshire (LA), East Midlands (Network) and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS, Department of Communities and Local Government \(DCLG\)](#)

Compared with White people, those of South Asian ancestry are at [increased risk of coronary heart disease](#), and Afro-Caribbeans are more likely to have a stroke. We were unable to obtain data on the ethnicity of Northamptonshire patients treated for cardiovascular disease with which to carry out an ethnicity analysis. This would have enabled us to assess whether ethnic minorities cardiovascular health needs were being met.

What is the evidence base for interventions? What is best practice?

There is a large amount of guidance from the National Institute of Health and Care Excellence on the prevention and treatment of cardiovascular disease. It includes [guidance on preventing the uptake of smoking by children and young people](#) and on [promoting physical activity](#), through to the management of clinical conditions such as [raised blood lipids](#), [chronic heart failure](#) and [hypertension](#). This guidance indicates that the prevention of cardiovascular disease are to avoid smoking, to be physically active and to follow a healthy diet.

What is the pattern of services in Northamptonshire at present?

The prevention of cardiovascular disease includes

- overall measures to improve community resilience and combat socioeconomic inequalities in health
- the promotion of healthy eating and physical activity
- tobacco control, including reducing the take-up of smoking and helping smokers quit.

Within the time constraints of this report, we could not be provided with any information on the first of these. The obesity strategy covers the second of these and the JSNA section on smoking covers the third.

Primary care interventions for cardiovascular disease include

- the estimation of individuals' risk
- the diagnosis and management of diseases which increase the risk of cardiovascular disease, such as hypertension and diabetes

- other measures to reduce risk, such as smoking cessation advice, dietary change and lipid-lowering medication
- diagnosis of cardiovascular diseases
- treatment of symptoms of cardiovascular diseases, including heart failure and angina
- referral of patients with angina, transient ischaemic attack and other clinical problems.

The available information set out above indicates that primary care in Northamptonshire performs in line with elsewhere in these activities. There is considerable room for improvement in the diagnosis and recording of cardiovascular risk factors and disorders.

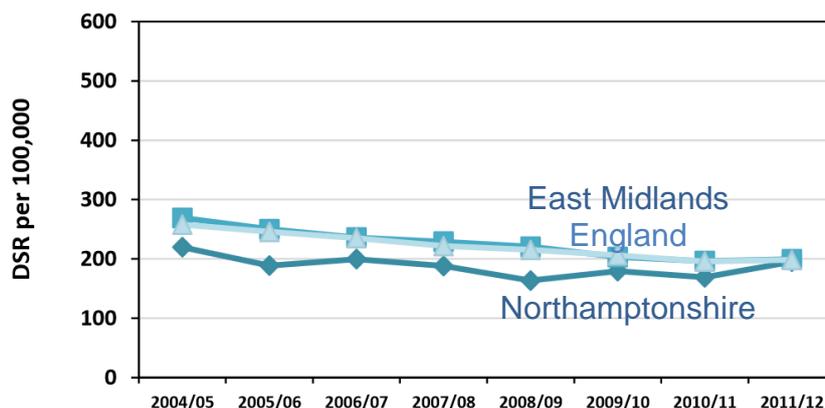
Hospital services for people with cardiovascular disease include

- emergency treatment of myocardial infarction, stroke, acute heart failure and other medical emergencies
- investigation of cardiac and cerebrovascular disease
- outpatient management of patients with more complex disease
- revascularisation procedures such as percutaneous transluminal coronary angioplasty and coronary artery bypass grafting
- carotid endarterectomy, valve surgery and other specialised cardiovascular procedures.

The rate of emergency admissions for coronary heart disease in Northamptonshire [fell by 11% between 2004/5 and 2011/12](#). The reduction was much faster elsewhere: in England the rate decreased by 23% and in the East Midlands by 26%. A similar pattern is seen with emergency admissions for heart failure; in the same period these fell by 14% in Northamptonshire, 18% in England and 21% in the East Midlands (Figure 13). Emergency admissions with stroke rose by 3% in England and 2% in the East Midlands; the rise in Northamptonshire was 7%. These trends occur against a background in which the incidence of and mortality from coronary heart disease has been falling, a trend less apparent in the case of stroke.

There are several possible explanations for these differences between Northamptonshire and elsewhere. It could be that rates of coronary heart disease have fallen more slowly in Northamptonshire, though Figure 20 below suggests this is unlikely. Another explanation is that admission rates were previously relatively low and are now catching up; this explanation is supported by Figure 16.

Figure 16: Age-standardised emergency admission rates for heart failure, Northamptonshire, East Midlands and England, 2011/12

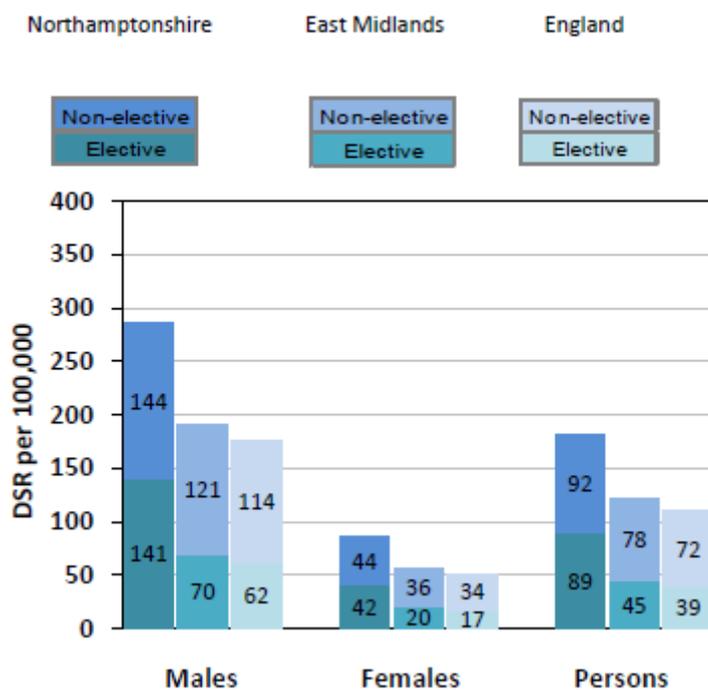


Source: [HES, Health and Social Care Information Centre, ONS](#)

Of all clinical services for people with cardiovascular disease, revascularisations show the most unusual pattern in Northamptonshire. Cardiac revascularisation procedures are used to treat coronary heart disease; they comprise coronary angioplasty, a less invasive procedure carried out via a blood vessel, and coronary artery bypass grafting, a major surgical operation.

Rates of angioplasty in Northamptonshire are very high (Figure 17). In 2011/12, 1551 angioplasty procedures were carried out on residents of the County, a rate of 182 per 100,000. This is significantly higher than the rates for England (111 per 100,000) and for the East Midlands (122 per 100,000). Figure 17 shows that the high rate is mainly due to elective procedures, which make up about half of the angioplasties in Northamptonshire but only about a third of those in England and the East Midlands.

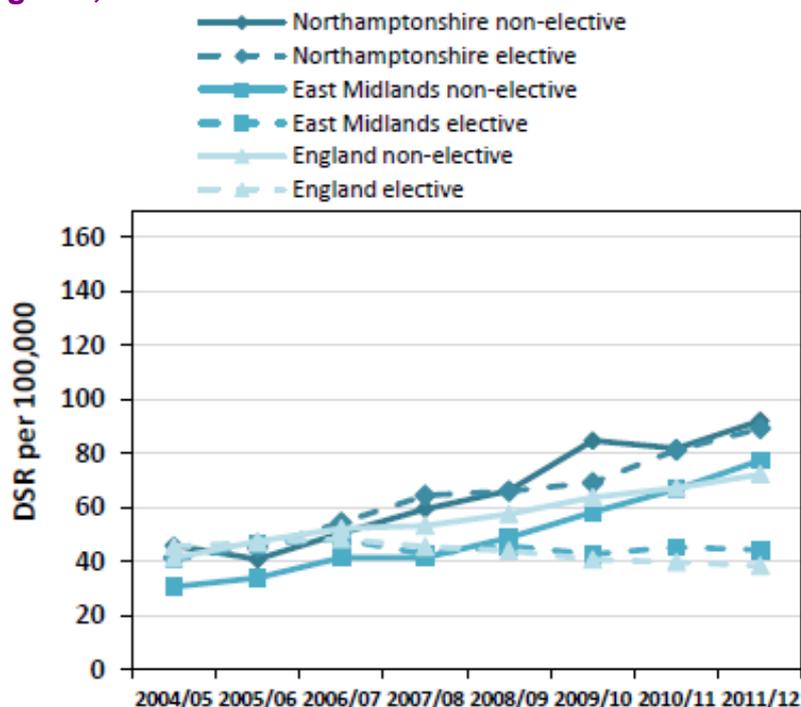
Figure 17: Elective and non-elective angioplasty rates, Northamptonshire, East Midlands and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS](#)

Figure 18 corroborates this finding. Until about 2006/7, rates of elective angioplasty in Northamptonshire, the East Midlands and England were similar. Since then, the rates in the latter two comparator areas have fallen slightly, whereas the rate in Northamptonshire has approximately doubled. The divergence in rates is striking. By contrast, rates of emergency angioplasty have increased steadily in Northamptonshire, the East Midlands and England, though the rise in Northamptonshire has been steeper.

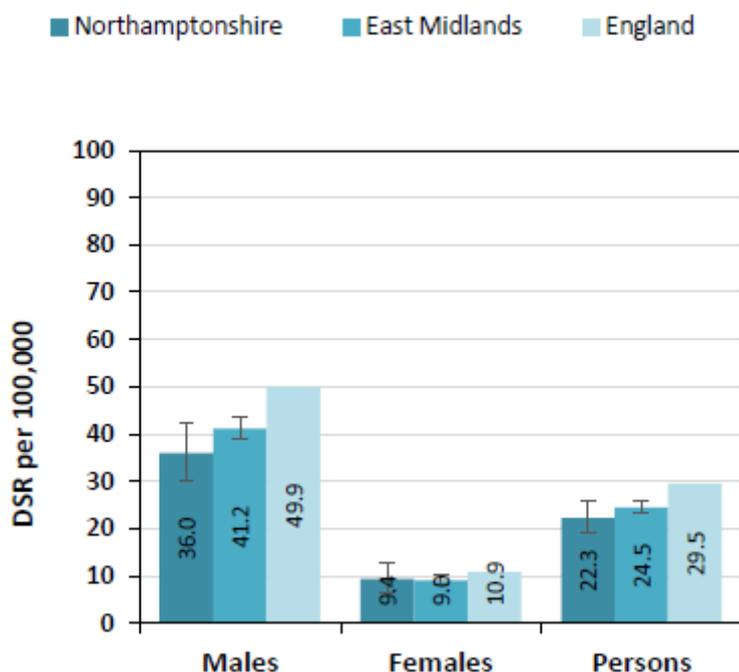
Figure 18: Trends in rates of angioplasty, Northamptonshire, East Midlands and England, 2004/5 to 2011/12



Source: [HES, Health and Social Care Information Centre, ONS](#)

Rates of coronary artery bypass grafting show a markedly different pattern (Figure 19). Coronary artery bypass grafting is now generally much less commonly performed than angioplasty. However, this difference is much more marked in Northamptonshire than elsewhere: in England, angioplasty outnumbers coronary artery bypass grafting by 3.8 to 1, whereas in Northamptonshire the ratio is 8.1 to 1.

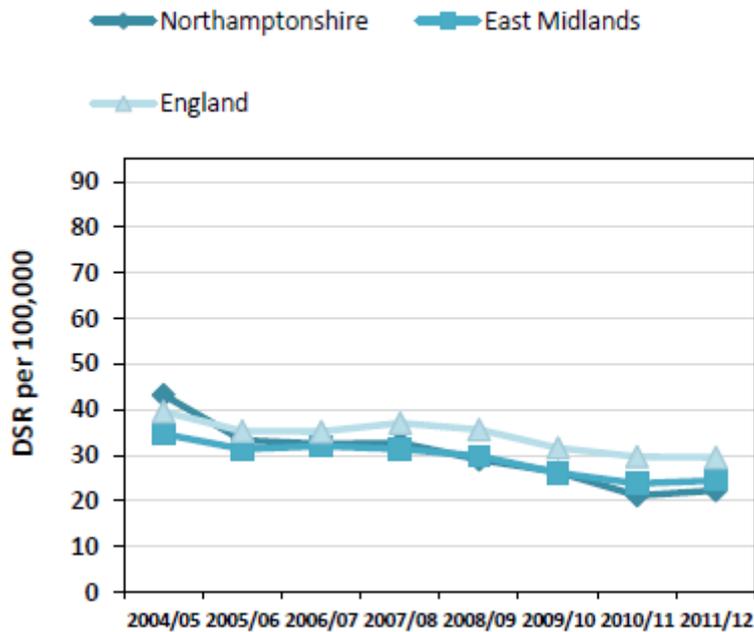
Figure 19: Coronary artery bypass grafting rates, Northamptonshire, East Midlands and England, 2011/12



Source: [HES, Health and Social Care Information Centre, ONS](#)

Again, the trend data corroborate the findings from the activity data from 2011/12. Figure 20 shows that in 2004/5, Northamptonshire's rate of coronary artery bypass grafts was slightly higher than that of England and the East Midlands. Since then, there has been a shift to angioplasty, such that Northamptonshire's rates of surgical revascularisation are now lower than those elsewhere.

Figure 20: Trends in rates of coronary artery bypass grafting, Northamptonshire, East Midlands and England, 2004/5 to 2011/12



Source: [HES, Health and Social Care Information Centre, ONS](#)

The unusually high rates of coronary angioplasty in Northamptonshire were reported by the East Midlands Cardiovascular Network in March 2013. These rates were concentrated in district councils served by Kettering General Hospital. The report recommended that commissioners and providers should jointly arrange an independent audit of clinical practice by Northamptonshire providers of angioplasty. Such an audit is now being arranged.

What is the cost of current services?

We were able to obtain 2012/13 cost data for Nene CCG outpatient and elective cardiac procedures. The total costs of these for 2012/13 were £1.48m and £827k respectively. The following data were not unavailable within the timescale of this project:

- emergency cardiac activity and costs for Nene CCG
- cardiac activity and costs for Corby CCG
- all cardiac activity and costs for the part of East Northamptonshire which is in neither Nene nor Corby CCG
- stroke activity and costs for all of the County.

Total prescribing costs for cardiovascular drugs in Corby CCG were £915,860 in the year to August 2013. This is £12,948 per patient, substantially lower than the £15,995 per patient in

England. In Nene CCG, the corresponding figures were £8,753,973 and £13,753. These lower costs could be due to more efficient prescribing (for example use of generic medications), better targeted prescribing which avoided waste, under-provision of medications to suitable patients and lower need; the last of these possible explanations is unlikely given Northamptonshire's average levels of cardiovascular disease.

[Commissioning for Value](#) is a programme designed to help CCGs improve the value of and outcomes from the services they commission. It is a collaboration between NHS Right Care, NHS England and Public Health England. It compares each CCG with similar ones to identify areas of spending where lower costs or better outcomes should be achievable, by hypothesising the costs and outcomes if that CCG's performance improved to equal a peer group of similar CCGs.

Cost data from [Commissioning for Value](#) indicate that in 2011/12 Nene CCG spending on cardiovascular disease included £43.30 per head for secondary care; this comprised £14.30 for elective and day-case admissions and £28.90 on emergency admissions. Admission rates in these categories were respectively 15.1, 5.8 and 9.3 per thousand. These six figures were not generally high, with only rates of, and spend on, elective and day-case admission lying in the fourth quartile of all CCGs. However, and more importantly for the *Commissioning for Value* methodology, all were statistically significantly higher than the peer group of ten CCGs². Nene CCG also registered as significantly worse than its peer group on admission rates and premature mortality from circulatory disorders, though on these measures it is not an outlier by overall national standards.

The insight packs issued in October 2013 indicate that Nene CCG could reduce mortality from cardiovascular disease by 81 lives a year; this is the largest potential impact of the six clinical areas considered. The pack suggests that £3.61m could also be saved from the CCG's spending on elective cardiovascular services, and £4.34m from emergency cardiovascular services – again these potential savings are larger than in the other clinical areas. Prescribing costs could be reduced by £900,000.

How valid is this approach and what does it mean? Those responsible for *Commissioning for Value* emphasise that these analyses are indicative and should be considered as a possible prompt to a deeper service review, rather than conclusive in their own right. The analysis suggests that Nene CCG's spending and outcomes are unexceptional by English standards, but that in comparison with its peer group, it has higher admission rates, spends more and has poorer outcomes. However, Nene CCG is the ninth most deprived of the ten peers, only Southern Derbyshire being more deprived; the methodology appears to regard the peer group as homogenous and takes no account of the possibility that differences within the group explain outliers. Interestingly, Southern Derbyshire shows a similar set of outlier results within the peer group.

So, to some extent, relative deprivation, higher disease prevalence and higher need explain Nene CCG's outlier status: with higher need, it should be spending more and having more activity. The high use of angioplasty in Kettering will also be a factor. The key question is whether this is the whole explanation, or whether Nene's activity and spending are high even after allowing for the differences it has with its peers. For this, more analysis is required.

² The members are Southern Derbyshire, East and North Hertfordshire, Bedfordshire, Herts Valleys, Gloucestershire, Wiltshire, Mid Essex, Cambridgeshire and Peterborough, Oxfordshire and Somerset.

Commissioning for Value assigned Corby CCG a different and less affluent peer group³. Its spending on cardiovascular disease included £54.40 per head for secondary care; this comprised £23.40 for elective and day-case admissions and £30.60 on emergency admissions. Admission rates in these categories were respectively 20.6, 9.9 and 10.5 per thousand. Corby CCGs is deemed capable of saving £1.05m from elective cardiovascular services and £333,000 from emergency cardiovascular services. In contrast to Nene, these results are extreme by comparison with England, not just in comparison with the CCG's peer group: Corby's rates of, and spend per head on, elective and day case admissions is the highest in England; its rates of, and spending on, secondary care admissions is fourth highest. It is a marked outlier, with its rate of elective and day case admissions more than twice the England average and 14% more than the second highest CCG on this measure.

For Corby CCG, an important question is the extent to which these results are because of the high use of angioplasty in Kettering or whether there are more systematic drivers of overuse of cardiovascular services.

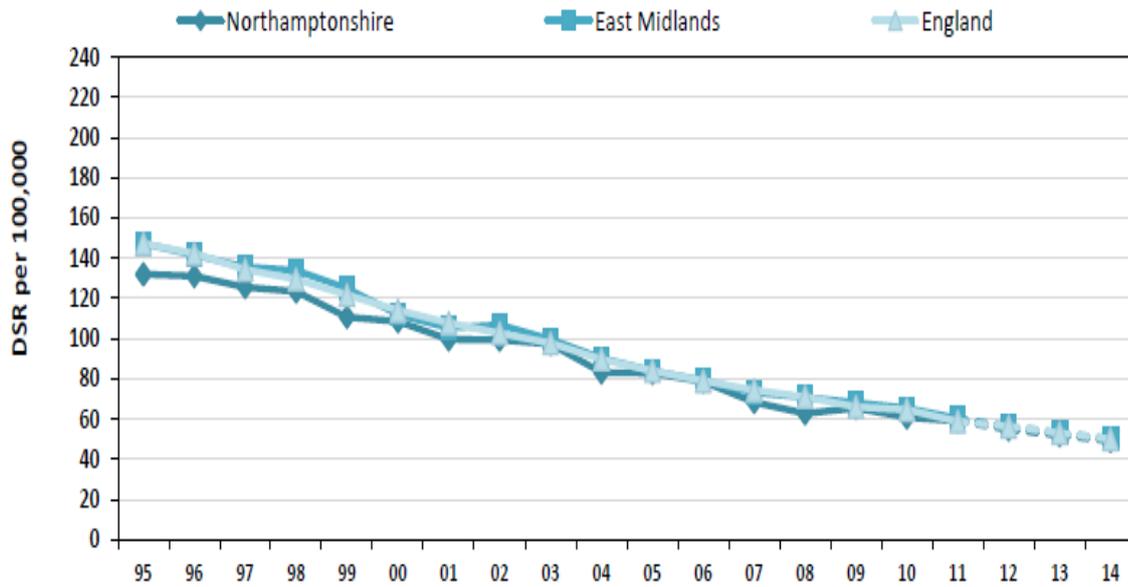
A final point of note is that both analyses point to the low reported prevalence of coronary heart disease on GP registers as a sign of adverse service quality.

What is the evidence of progress in developing these services?

Progress is being made in reducing the impact of cardiovascular disease in Northamptonshire. Death rates are falling in line with those elsewhere in the East Midlands and England (Figure 21). In 2011, the age-standardised death rate from cardiovascular disease in people less than 75 years old, a key indicator in the Public Health Outcomes Framework, was 59 per 100,000 in Northamptonshire, the same as for England as a whole. By 2014, this rate is expected to have fallen in the County by 41% since 2004, a similar fall to the declines of 44% projected for both the East Midlands and England as a whole. Rates of premature mortality from both coronary heart disease (Figure 22) and stroke (Figure 23) show clear downward trends.

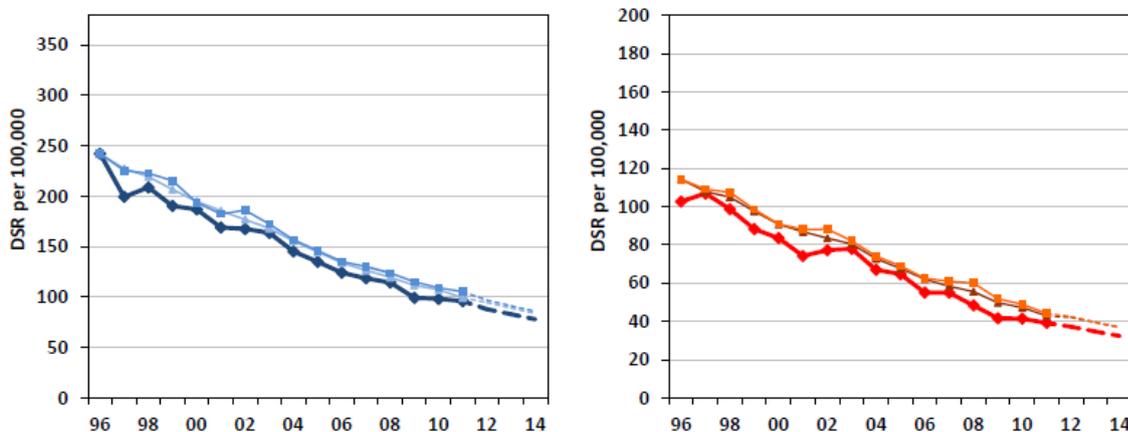
³ The members are Halton, Bury, Tameside and Glossop, Telford and Wrekin, Vale Royal, St Helens, Rotherham, Warrington, Trafford and Mansfield and Ashfield.

Figure 21: Directly standardised mortality rates, cardiovascular disease, persons under 75 years, Northamptonshire, East Midlands and England, 1995 to 2011 with a projection to 2014



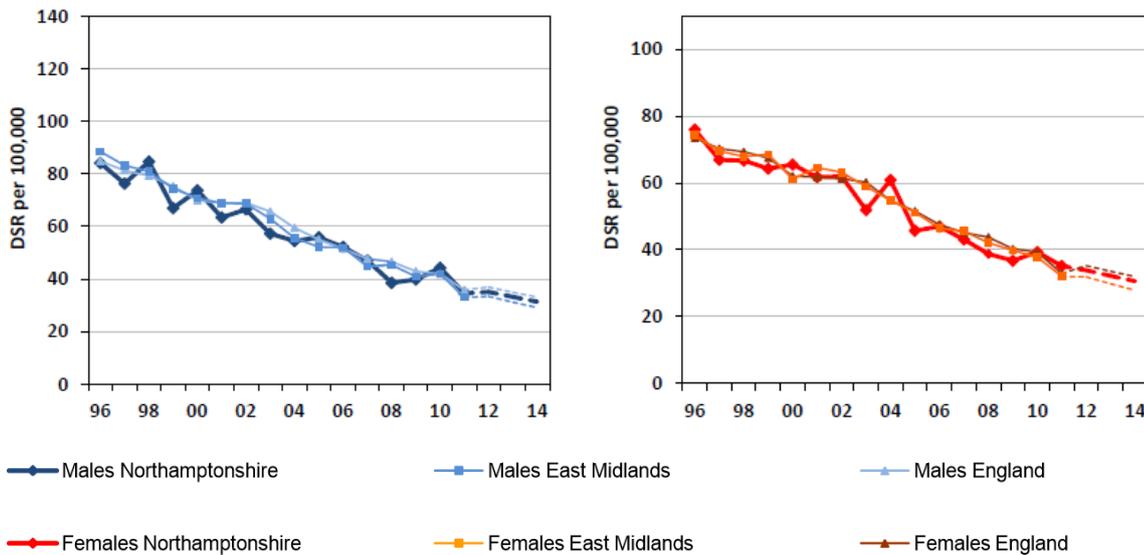
Source: [Health and Social Care Information Centre, PHO annual deaths extract, ONS](#)

Figure 22: Directly standardised mortality rates, coronary heart disease, Northamptonshire, East Midlands and England, 1995 to 2011 with a projection to 2014



Source: [Health and Social Care Information Centre, PHO annual deaths extract, ONS](#)

Figure 23: Directly standardised mortality rates, cerebrovascular disease, Northamptonshire, East Midlands and England, 1995 to 2011 with a projection to 2014



Source: [Health and Social Care Information Centre, PHO annual deaths extract, ONS](#)

What do service users and carers say about their needs and the services that they receive?

No information was available on this within the project timescales.

What additional information is needed?

It would be useful to obtain information in the following areas, to enable a full needs assessment:

- emergency cardiac activity for Nene CCG
- all cardiac activity for Corby
- all cardiac activity for the part of East Northamptonshire which is in neither CCG
- stroke activity for all of the County

What are the recommendations to improve and support commissioning and forward planning to ensure quality of care and value for money?

The prevention of cardiovascular disease

We were not able to obtain information on Northamptonshire's strategies to improve community resilience and combat socioeconomic inequalities in health, and to promote healthy eating and physical activity. These background and lifestyle factors underlie the incidence of cardiovascular disease, as well as many other physical and mental health problems. Helping people in Northamptonshire to eat more healthily and be more physically active will reduce the

risk of cardiovascular disease, as well as improving well-being and combating other long-term conditions.

Smoking is one of the most important risk factors for cardiovascular disease. The JSNA section on tobacco control sets out how Northamptonshire could use a tobacco control strategy to prevent children and young people from starting to smoke and to reduce in other ways the prevalence of smoking. It also describes how an enhanced smoking cessation service would enable more smokers to quit, and how this would save lives and reduce demand on primary and secondary care.

Primary care interventions for cardiovascular disease

These are of great importance in identifying those at included risk, and in diagnosing and managing cardiovascular disease and its risk factors.

Primary health care teams in Northamptonshire have made a slower start than those elsewhere to the implementation of the NHS Health Check. There are large and unexplained differences between practices in the extent to which the benefits of this programme have been made available to patients. As a result, Northamptonshire residents at high risk of cardiovascular disease who would have been identified and helped to reduce their risk had they lived elsewhere in England are still exposed to the high risk and unaware of it.

The available information indicates that primary care in Northamptonshire performed in line with elsewhere in diagnosing and recording cardiovascular risk factors, but there is considerable room for improvement. Our analysis indicates that 245,000 Northamptonshire residents have coronary heart disease, stroke or hypertension which is either undiagnosed or unrecorded by their primary health care team. This means that neither they nor their primary health care team are able to act to reduce the risks posed by these clinical risk factors.

Hospital services for cardiovascular disease

In Northamptonshire, these are performing broadly in line with those elsewhere. Rates of admission and intervention are what would be expected for this population, and there is encouraging evidence that deprived communities with much higher rates of cardiovascular disease are receiving correspondingly higher levels of care. The outstanding anomaly is the very high and still rising rate of angioplasty in the area served by Kettering General Hospital; this is now the subject of a formal review.

Recommendations

1. Northamptonshire should give greater strategic emphasis to reducing the risks of cardiovascular disease in its residents. We were not able, within the constraints of this project, to find evidence of a co-ordinated approach to the promotion of healthy eating, physical activity and a tobacco-free Northamptonshire. In addition to our recommendation elsewhere of a tobacco control strategy, we recommend that the Health and Well-being Board also oversees the production of strategies on these two areas of behaviour change:

We recommend that Northamptonshire develops a strategy on healthy eating. This could include:

- restricting planning permission for take-aways and other food retail outlets in specific areas, for example, within walking distance of schools
- ensuring publicly funded venues provide a range of affordable healthier options
- encouraging venues frequented by children and young people and supported by public money to resist sponsorship or product placement from companies associated with foods high in fat, sugar or salt
- providing only healthy food via publicly funded outlets
- encouraging workplaces and employers to offer and promote access to healthy foods and beverages.
- promote brief interventions in health and educational settings.

We also recommend a strategy on physical activity. This could include:

- *leadership*: promoting the importance of encouraging physical activity as part of all council portfolios, ensuring physical activity is a key priority when developing local authority programmes and targets, explaining to the public the local authority's role in promoting physical activity.
- *policy*: promoting the benefits of physical activity and encouraging participation creating an environment which encourages physical activity, building physical activity into the planning process, promoting access by foot and cycle, promoting physically active and sustainable travel.
- *commissioning*: developing exercise referral programmes, promoting community walking and cycling schemes, ensuring brief advice on physical activity is incorporated into care pathways.

Further guidance is available [here](#) and [here](#).

2. Primary care services should improve their approach to the identification and management of people at increased risk of cardiovascular disease. There are two key elements to this:
 - Accelerating roll-out of the NHS Health Check. Whatever the reasons for the delayed start to NHS Health Check in Northamptonshire, it has disadvantaged people at increased risk and allowed their disease to progress further without risk factor modification. Northamptonshire County Council is required to ensure that all eligible residents have been invited for NHS Health Check by April 2018, which will require an acceleration in the present rate of progress.

Working with partners in NHS England, the clinical commissioning groups and primary care, the County Council should consider how rates of invitation and uptake could be increased. This might include

- using outreach workers to directly engage with vulnerable communities
- delivering NHS Health Check directly in deprived areas, rather than via primary care

- working with a broader range of community providers such as pharmacies, voluntary and community organisations that have a presence among more disadvantaged communities
- ensuring that NHS Health Check materials are translated and culturally relevant
- examining innovative delivery methods such as health buses.

Four Northamptonshire practices have already provided more than a third of their registered patients a cardiovascular risk assessment; understanding how they have achieved such early success will be useful for the others.

- Improving rates of clinical diagnosis, recording and risk management in primary care: PHAST's analysis indicates that 230,000 people with clinical conditions that increase their risk of serious cardiovascular events remain undiagnosed or unrecorded by primary care systems in Northamptonshire, with the result that their risk cannot be addressed and modified. Those responsible for the quality of primary care services in the County should work with NHS England and the clinical commissioning groups to improve practices' performance so that the majority perform as well as the best. Much of this will follow from successful implementation of NHS Health Check and a rigorous and methodical approach to using the information it provides.

Our analysis of hospital services was constrained by the limited data available on services available and the consequent costs. The available information indicates that activity is broadly in line with population needs and is equitable, apart from the anomalous pattern of activity in Kettering. However, a more granular analysis would be appropriate, using programme budgeting techniques. It may be that Northamptonshire's clinical commissioning groups have already reviewed their patterns of investment and identified opportunities to use the available resources better, though they are new organisations and may not yet have had time to undertake this. Some of our contacts indicated that a more comprehensive review of the commissioning of cardiovascular services was planned for 2014, and we commend this.