

Taking the pulse of NHS services

Stroke prevention and atrial fibrillation

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1. Executive summary

Stroke is the third largest cause of death in England and costs the NHS £2.8 billion each year¹. AF is a known risk factor for stroke, increasing its risk and severity². This report brings together, for the first time, data and evidence on variations that exist in the diagnosis, treatment and quality of life for patients living with atrial fibrillation (AF) and AF related stroke.

A wide range of data has been collated so that local commissioners and providers can see the variations that exist across England and compare local impact and performance with other areas in terms of:

- the burden of AF and stroke
- the identification and diagnosis of AF
- the treatment and management of AF
- the costs associated with AF and stroke
- the quality of patient experience

The report also analyses the policy opportunities to ensure that stroke and AF remains a priority for government, and makes a series of practical recommendations for change.

AF causes an irregular and often abnormally fast heart rate³. It is the most commonly sustained cardiac arrhythmia^{4,5} and affects up to 750,000 people in the UK⁶. The way the heart beats in AF means that there is a risk of blood clots forming in the heart chambers. If these get into the bloodstream, they can cause a stroke. AF increases the risk of stroke by up to five times⁷ so it must be appropriately identified and managed to reduce symptoms and prevent complications such as increased rates of death, stroke and other thromboembolic events, as well as impaired quality of life⁸. In total, it is estimated that 12,500 strokes are directly attributable to AF each year⁹.

Strokes associated with AF are often fatal. Of those patients who survive, they are likely to be left more severely disabled and are more susceptible to recurrence than patients who have strokes due to other causes. The best way of reducing the human and economic costs of stroke is through prevention¹⁰. The first step in achieving this is through systematic identification of patients with AF. Comparison of the diagnosed population with the expected prevalence for the population will enable variations and sub-optimal performance on identification of AF to be addressed.

Patients diagnosed with AF require active management of their condition. A patient may have no apparent symptoms before having a stroke. For patients diagnosed with AF, anticoagulation is an effective treatment option to help reduce their risk of having a stroke. Antiplatelet therapies (such as aspirin) have been used in lower risk patients, but are now not generally deemed appropriate. However, as recognised by the National Institute for Health and Clinical Excellence (NICE), current anticoagulant management of AF is sub-optimal¹¹. This is a matter requiring urgent action.

NICE estimates that 46% of patients that should be on warfarin (the most commonly prescribed treatment for stroke prevention in AF) are not receiving it¹². This is because they have contraindications, are not able to stay on the treatment, or are simply not offered it. Taking warfarin requires regular attendance at an anticoagulation clinic to monitor and adjust treatment dose. This can be problematic for people in full-time employment, who can find it hard to take time off work, and the elderly who might find it difficult to regularly attend clinic. Also regularly changing the dosage of medication can be confusing.

There is clearly an unmet need in treatment for patients with AF. However, new oral treatments emerging in this area hold promise to improve the quality of life and outcomes for patients with AF. Improved care planning will ensure that patients are able to manage their condition more effectively, mitigate the risk of significant adverse event from treatment, and give people choice and control over the management of their condition and its impact on their daily lives.

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2. Recommendations

Recommendation 1

The Department of Health should consider the introduction of a national audit for AF, linked to other relevant datasets. These data should be used by local commissioners and providers to determine how they compare to other areas of the country and encourage the adoption of best practice in AF care.

Recommendation 2

Hospitals and general practice should take steps to identify patients with AF who are unaware that they have this condition. Every person diagnosed with AF should be provided with a full explanation of what this diagnosis means for them, including their increased risk of stroke. This should be supported by appropriate written information, as well as a clear point of contact for where they can get further information and seek answers to any questions. Once treatment has commenced this should be documented and each patient should be provided with a personalised care plan.

Recommendation 3

Once a diagnosis has been confirmed, patients should be supported to make an informed choice about the best course of treatment for them (in line with NICE guidance) in order to effectively manage their condition and reduce their risk of having a stroke. People who are finding it difficult to tolerate warfarin, or who are finding that warfarin is not thinning their blood to the required therapeutic range, should have the opportunity to explore other treatment options.

Recommendation 4

The Department of Health and the NHS Information Centre should pilot a National Cardiovascular Disease Patient Experience Survey which includes people living with all forms of the disease, including AF. Data collected through the pilot should be made publicly available so that local commissioners and providers can benchmark their performance and seek to improve where poorer patient experience is reported.

Recommendation 5

The forthcoming Cardiovascular Disease Outcomes Strategy should explicitly include AF, recognising the unique issues faced by patients with the condition. The Strategy should create a joined-up approach across the NHS, public health and social care, to secure the improved care for people with cardiovascular disease, including AF, across the entire patient pathway, covering prevention and early diagnosis, stroke prevention, treatment, management in primary and secondary care, and rehabilitation.

3. The burden of AF and stroke

Stroke is the third largest cause of death in England and costs the NHS £2.8 billion¹³. Atrial fibrillation (AF) is a known risk factor for stroke, increasing its risk and severity¹⁴. AF causes an irregular and often abnormally fast heart rate¹⁵. It is the most commonly sustained cardiac arrhythmia^{16,17} and affects up to 750,000 people in the UK¹⁸. The way the heart beats in AF means that there is a risk of blood clots forming in the heart chambers. If these get into the bloodstream, they can cause a stroke. AF increases the risk of stroke by up to five times¹⁹ so it is important that this condition is appropriately identified and managed to reduce symptoms and prevent complications such as increased rates of death, stroke and other thromboembolic events, as well as impaired quality of life²⁰.

In total, it is estimated that 12,500 strokes are directly attributable to AF each year²¹. The prevalence of AF increases rapidly with age²², so as the population increasingly ages this means that the burden of AF will increase. The importance of recognising and treating AF increases with age, as the incidence of resulting strokes rises from 1.5% amongst people aged 50-59 to 23.5% amongst people aged 80-89²³.

The classical risk factors for developing AF include hypertension, valvular disease, (ischaemic) cardiomyopathy, diabetes, and thyroid disease. However, there is also a cohort of patients who do not have any of these underlying risk factors who become at risk of AF because of lifestyle factors, such as excess alcohol consumption, intensive sport and exercise, and obesity²⁴. This means that although the age profile for people with AF is generally older, younger people are also at risk of developing the condition.

Given that the group of people who may suffer from AF is varied, it is essential that people at risk are identified, diagnosed and then properly managed. The first step in achieving this is through systematic identification of patients with AF and determining the prevalence of the condition in each local area.

Measuring the prevalence of AF can be challenging, but one way to gauge the prevalence of this condition is through data collected to support the Quality and Outcomes Framework (QOF), which incentivises GP practices to keep a register of people with AF. This may differ from prevalence figures from other sources because

of coding or definitional issues, but is a useful indication of how widespread a condition is.

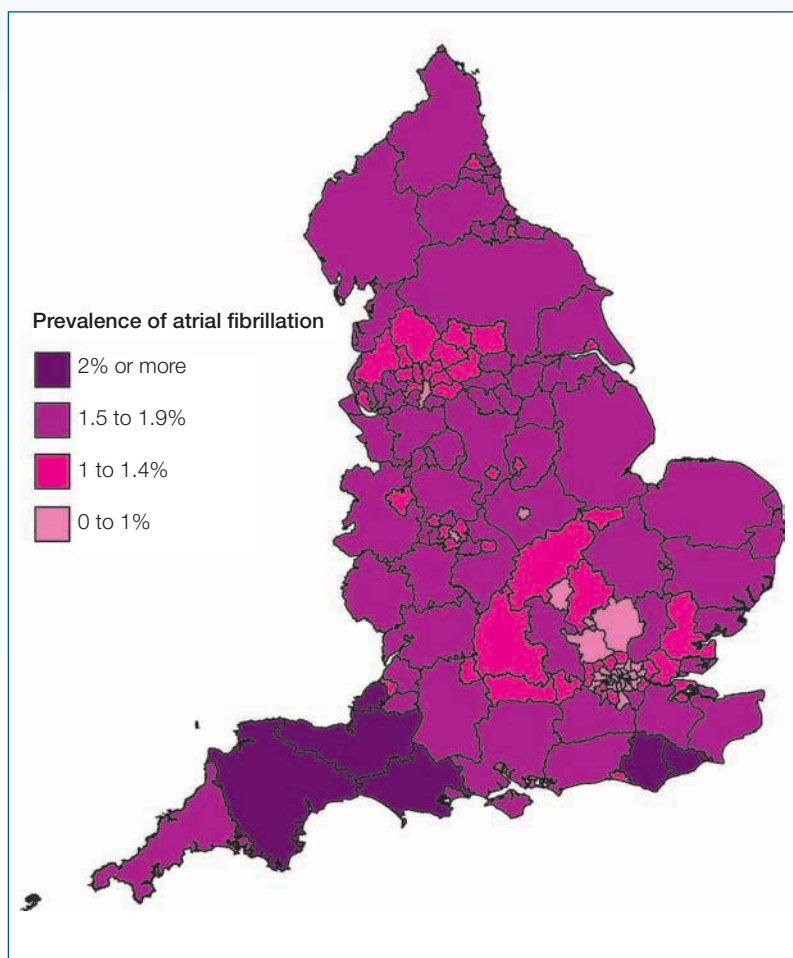


Figure 1: Prevalence of atrial fibrillation on QOF disease registers 2010/11²⁵

Figure 1 shows the prevalence of AF based on data from the QOF AF disease register, showing the percentage of the population in each PCT registered by their GP as having AF. The data reveal that in 2010/11 there were

791,174 people included on GP registers for AF²⁶. This is the equivalent to the population of a city the size of Leeds²⁷. Variation in the percentage of patients registered with AF varies from the lowest of 0.4% in NHS Newham to the highest of 2.3% in NHS Dorset.

However, the actual number of people living with AF is likely to be higher than this given that there will be a pool of people who have not reported symptoms, do not have obvious symptoms or where healthcare professionals have not yet diagnosed the condition. Estimates suggest that the undiagnosed population could be as high as 700,000²⁸. This means that there are likely to be 1.5 million people with AF, which is almost as many people as are living with cancer in England²⁹.

The prevalence of AF is also likely to have an impact on services and expenditure in other parts of the health service. For example, Figure 2 shows there is a correlation between a higher prevalence of observed atrial fibrillation and a lower rate of stroke emergency readmissions.

The pattern is not uniform across the country with a number of outliers. For example, NHS Newham had the

lowest observed atrial fibrillation prevalence of 0.4% and had the highest rate of stroke emergency admissions 172.74 per 100,000 population. However, this does demonstrate that if AF is identified, and by implication treated, then other health service interventions may be averted and a poorer patient experience can be avoided.

Opportunistic case finding should take place when a person presents with symptoms commonly associated with AF. The NICE Clinical Guideline on Atrial Fibrillation suggests that it is good practice to check the blood pressure and pulse of all patients with breathlessness, palpitations, dizziness or chest discomfort³².

The Government has recently committed to a policy where in the health service “every contact counts”. This is extremely important for people who are undiagnosed with AF and have other signs and symptoms of the condition. Healthcare professionals, including GPs, nurses and community pharmacists should be encouraged to take any opportunity to conduct opportunistic testing for AF in people who may be at elevated risk, in the spirit of the “every contact counts” policy.

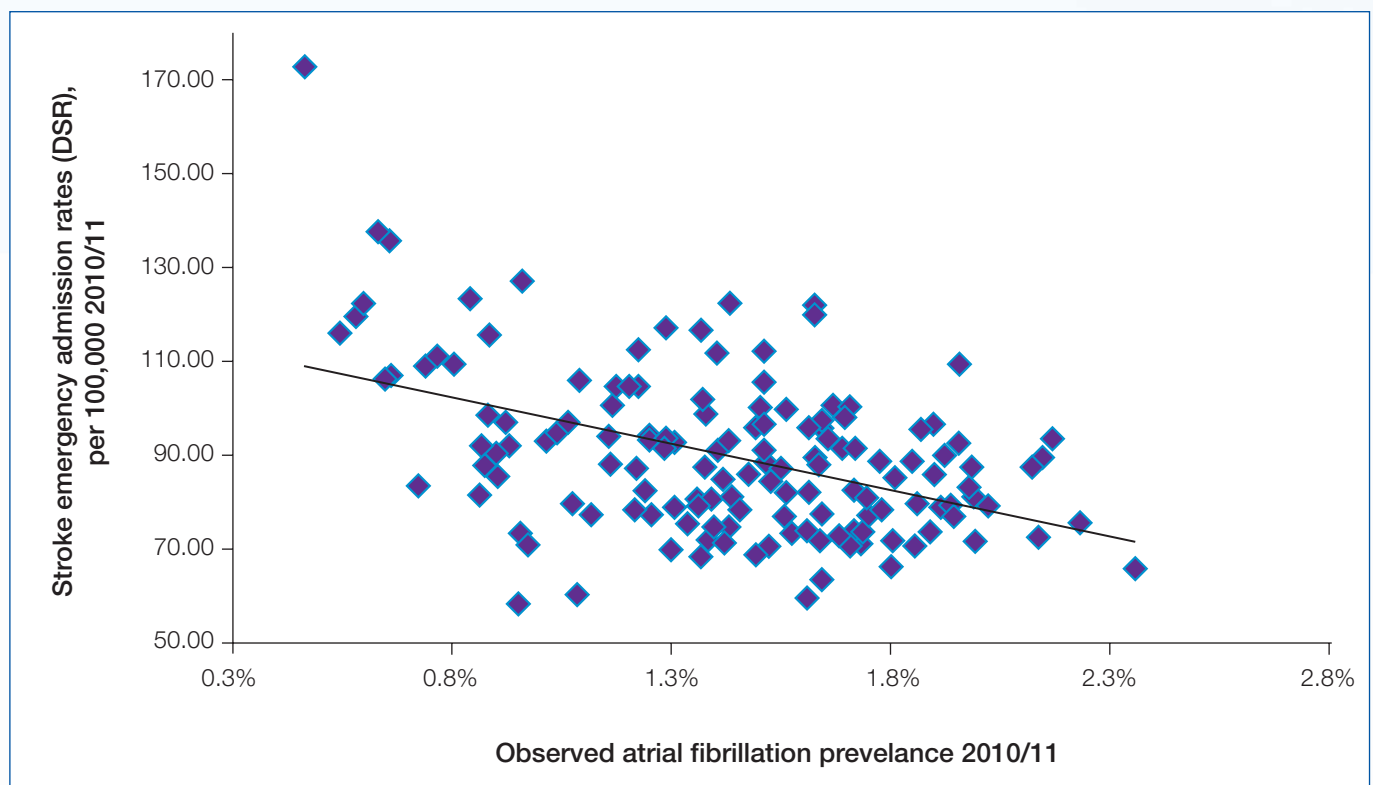


Figure 2: Atrial fibrillation prevalence 2010/11³⁰ versus stroke emergency admission rates (DSR), per 100,000 population, 2010/11³¹

4. Variation in diagnosis of AF

Early identification of AF means that its symptoms and its consequences can be managed and mitigated. As discussed above, there is likely to be a pool of approximately 700,000 people living with AF but who are unaware of this³³ and the increased risk it gives them in relation to other cardiovascular events.

There is variation in the number of people being diagnosed across different GP practices, which is to be expected given the natural demographic differences in GP catchment areas. However, analysis of MyHealthLondon data indicates that in the nation's capital there is variation in the numbers of GPs who are reporting AF prevalence in line with that expected for their local area.

Figure 3 shows that the majority of GP practices (75%) reported a lower than expected prevalence of AF (with 1 representing the expected prevalence). This raises questions about how actively GPs are identifying people at increased risk of AF. Those practices reporting less than half of the expected cases (15%) are a particular concern.

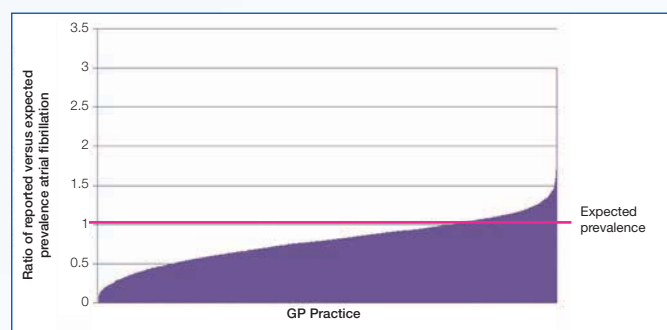


Figure 3: Ratio of reported versus expected prevalence of AF in London by GP practice³⁴

We have been unable to find data showing GPs performance across the country. We believe that there would be value in these data being collected and published centrally, if they are not already. Public Health Observatories should collate data on the identification of people at risk of AF by GP practice. This should be made readily available to the local population through the NHS Information Centre and NHS Choices.

Data are also collected through the QOF about the proportion of patients with diagnosed AF who have had their diagnosis confirmed with an ECG or other specialist confirmation. This is important because the NICE Clinical Guideline recommends that an ECG should be performed

on all patients, whether symptomatic or not, in whom AF is suspected because an irregular pulse has been detected³⁵. The guideline also states that referral for further specialist investigation should be considered especially in those with lone AF or ECG evidence of an underlying electrophysiological disorder³⁶. The data in Figure 4 demonstrate that there is variation in performance against this QOF indicator, with Kensington and Chelsea PCT the worst performer achieving just 89.8% and Darlington PCT the best performer achieving 98.2%.

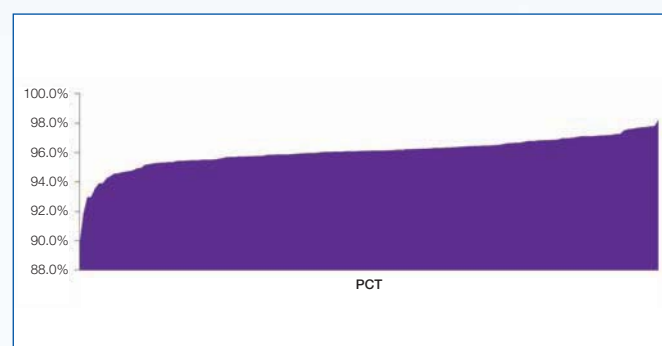



Figure 4: Achievement against QOF Atrial Fibrillation 4: the percentage of patients with atrial fibrillation diagnosed after 1 April 2008 with ECG or specialist confirmed diagnosis, 2010/11³⁷, *

The average achievement against this indicator was 96%³⁸. This may seem high, but implies that more than 31,600³⁹ people across the country have not had their diagnosis confirmed, which is unacceptable. As this indicator is being retired from the QOF for the financial year 2012/13 it will be important that levels of diagnostic confirmation are monitored. The reasons for variation in achievement against this indicator are not clear, but it may be indicative of problems with data collection in primary care or access to diagnostic tests in secondary care.

GPs should ensure that people with suspected AF are referred for diagnostic tests for confirmation of their condition. Confirmation is an essential step in the decision making process to enable appropriate management and treatment of AF. Commissioners should consider the data for their local area about the level of

*This graph is not represented in a 0% - 100% scale as given that there is a small, but important variation in the top 10%, ie 90% - 100%, this would not be clear on using the full scale.



diagnostic confirmation of AF to identify the barriers in achieving confirmation for every person with suspected AF. Commissioners should work with primary and secondary care providers to take appropriate action on this issue.

NHS Improvement, as part of its AF in primary care national priority projects, has developed guidance on risk assessment and stroke prevention for AF (GRASP-AF)⁴⁰. The GRASP-AF tool is available to all GPs and is currently being rolled out across the country as part of a systematic approach towards identification, diagnosis and the optimum management of patients with AF to reduce their risk of suffering a stroke. All GPs should be using the GRASP-AF to support the diagnosis of AF. Data from the use of these tools should be collected to allow for comparison of data and for benchmarking.

5. Treatment and management of AF

Why target AF?

People diagnosed with AF are five times more likely to have a stroke than people without the condition. Therefore, active management to minimise this risk, and to enable these people to live as normal a life as possible, is essential, particularly given that strokes can be prevented by getting people with AF onto the right treatment. The main group of treatments effective for stroke prevention in AF patients are anticoagulants. These increase the time it takes the blood to clot and so reduce the chances of a clot occurring. When anticoagulation therapy is appropriately used and monitored it is highly effective, lowering stroke risk by about two thirds⁴¹.

Sub-optimal treatment of AF

However, despite the effectiveness of anticoagulation therapy, NICE recognises that the current treatment of people with AF is sub-optimal⁴². NICE estimates that 46% of patients that should be on warfarin (the most commonly prescribed treatment for stroke prevention in AF) are not receiving it⁴³. This is because they have contraindications, are not able to cope with the side-effects of the treatment, or they are simply not offered it. If a patient is contraindicated or unable to tolerate the first anticoagulant that they try, they should be offered an alternative, in line with NICE guidance which states that *“treatment and care should take into account patients’ individual needs and preferences. People with AF should have the opportunity to make informed decisions about their care and treatment”*⁴⁴.

The Department of Health, as part of the Accelerated Stroke Improvement metrics, set a target that 60% of patients who suffer from a stroke should receive warfarin by April 2011⁴⁵. However data collected on rates at discharge for patients in whom AF has been identified as a co-morbidity demonstrates that the NHS has fallen well short of this target with only 39% of patients with AF being treated with warfarin⁴⁶.

The challenges of treating patients with warfarin

Although warfarin is an appropriate and effective treatment for many people who have AF, it can be difficult to ensure treatment adherence and good management is not straight forward for some people being treated with warfarin. Warfarin has a narrow therapeutic range

which means that there is a fine balance between decreasing the risk of thrombosis and increasing the risk of haemorrhage. The right dose varies from patient to patient. As a result, patients taking warfarin require regular attendance at an anticoagulation clinic to monitor their International Normalised Ratio (INR) (how fast their blood clots compared to the international average) and adjust their treatment dose. The frequency of monitoring will depend on the individual patient; however, regular attendance at anticoagulation clinics can be problematic for people in full-time employment, who can find it hard to take time off work, and the elderly who might find it difficult to regularly attend clinic.

Alongside the inconvenience of attending a clinic for regular follow-up, evidence suggests that in ‘real-life’ studies (outside of the confines of clinical trials) patients may stay within acceptable INR limits for less than 50% of the time⁴⁷. The National Patient Safety Agency raised concerns about the potential harm caused by inappropriate warfarin dosing in a patient safety alert published in 2007⁴⁸. Anticoagulants accounted for 4% of preventable adverse drug events (ADEs) and 10% of potential ADEs⁴⁹. This is backed up by a recent study by the General Medical Council (GMC) on the prevalence and cause of prescribing errors in general practice. The study found that a number of the severe prescribing errors related to the prescribing of warfarin with GPs prescribing warfarin to elderly patients who had not had their INR monitored for more than two years⁵⁰. In addition, the intensive monitoring required for patients on warfarin has financial implications for the NHS; an anticoagulation clinic visit costs £17 for a first appointment and £18 for each subsequent visit⁵¹. Furthermore, the management of ADEs contributes to significant additional costs for the NHS.

Data from GP practices on performance in relation to STROKE 12 in the QOF show that there is some variation in the number of practices that were able to demonstrate the *“percentage of patients with a stroke shown to be non-haemorrhagic, or a history of TIA, who have a record that an anti-platelet agent (aspirin, clopidogrel, dipyridamole or a combination), or an anti-coagulant is being taken (unless a contraindication or side-effects are recorded)”*. This could mean that patients who are not put on an effective treatment regime when they

are discharged from secondary care are not picked up in general practice⁵². Figure 5 shows the variation in achievement against this QOF indicator.

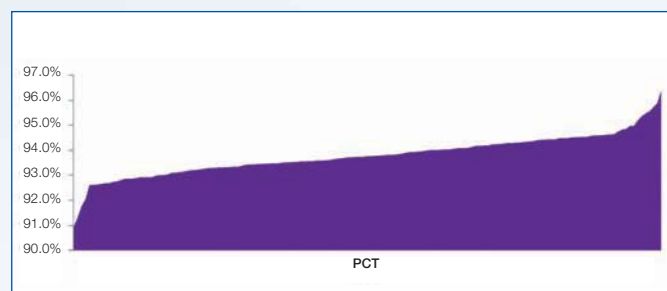


Figure 5: Achievement against QOF STROKE 12: the percentage of patients with a stroke shown to be non-haemorrhagic, or a history of TIA, who have a record that an anti-platelet agent (aspirin, clopidogrel, dipyridamole or a combination), or an anti-coagulant is being taken (unless a contraindication or side-effects are recorded), 2010/11⁵³, *

The best performing PCT for this indicator was NHS Havering, which achieved 96.4% and the worst performing PCT was NHS Lewisham which achieved 91.0%⁵⁴.

Specifically for those patients who have atrial fibrillation, performance against QOF indicator ATRIAL FIBRILLATION 3 “the percentage of patients with atrial fibrillation who are currently treated with anti-coagulation drug therapy or an anti-platelet therapy” shows that not all AF patients are being treated with anticoagulation or anti-platelet therapy.

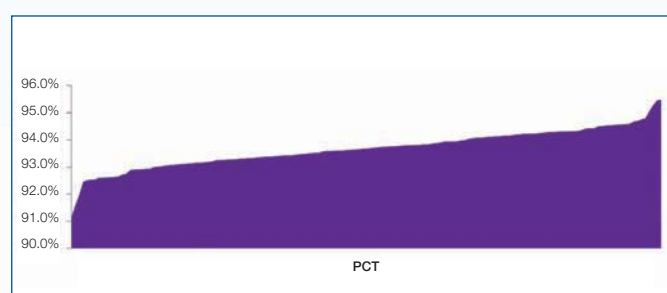


Figure 6: Achievement against QOF Atrial Fibrillation 3: the percentage of patients with atrial fibrillation who are currently treated with anti-coagulation drug therapy or an anti-platelet therapy, 2010/11⁵⁵, *

Figure 6 shows the variation in performance against this indicator. The average achievement is 93.7%. The worst performing PCT was NHS Kensington and Chelsea achieving just 91.1% and the best performing PCT was NHS Medway achieving 95.5%⁵⁶.

Anti-platelet vs anticoagulation treatment for AF

Although this indicator measures the number of patients being treated with anticoagulants or anti-platelet therapy, anti-platelet therapies (including aspirin) are not generally deemed to be appropriate for patients with AF⁵⁷. This is because for patients with AF treatment needs to be targeted at preventing blood clots forming in the heart, and anti-platelet therapies are targeted at clots in the arteries which are rich in platelets. Aspirin and other anti-platelet therapies also have an increased bleeding risk for chronic users which outweighs any small improvements in stroke reduction. It has been suggested that the risk of stroke for patients with AF can be reduced by 70% with warfarin and only 20% with aspirin⁵⁸.

Patient choice and care planning

According to a pan-European patient survey, 68% of people with chronic AF expressed their interest in anticoagulation drugs where routine monitoring is not required⁵⁹. Anticoagulation treatments have emerged which have the benefits of being oral treatments with no requirement for routine monitoring of coagulation parameters. These treatments will hopefully improve the quality of life for patients who require long-term anticoagulation, as well as improve medicines compliance and overall patient outcomes. Reducing the number of consultations and monitoring requirements should also deliver important cost savings for the NHS. It is crucial that NICE makes these treatments available for use on the NHS at the earliest opportunity and patients and healthcare professionals are given a choice of treatment for patients requiring anticoagulation.

Given the challenges with effective anticoagulation therapy, all patients who have had a stroke should have a care plan put in place before they leave hospital and all patients with AF should have a care plan put in place in primary care. This should include initiation of an appropriate treatment in line with NICE guidance. Data should be collected on the number of patients with a care plan put in place, as well as treatment regimes commenced. Care planning will ensure that patients are managed more effectively, mitigate the risk of significant adverse event from treatment, and give people choice and control over the management of their condition.

*These graphs are not represented in a 0% - 100% scale as given that there is a small, but important variation in the top 10%, ie 90% - 100%, this would not be clear on using the full scale.

6. Costs

Strokes associated with AF are often fatal⁶⁰. Of those patients who survive, they are likely to be left more severely disabled and are more susceptible to recurrence than patients who have strokes due to other causes. The risk of death from an AF-related stroke is double that of other strokes and there is a 1.5-fold increase in the cost of care⁶¹. It has been identified that the best way of reducing the human and economic costs of stroke is through prevention⁶². Unfortunately it is not possible to disaggregate the healthcare and non-healthcare costs of stroke where a patient has AF. However, investigating the overall costs of stroke demonstrates that the financial impact of unmanaged AF is significant.

Healthcare costs of stroke

The cost of stroke to the health and social care system in the UK has been estimated at just over £2.5 billion⁶³. Over 80% of these costs were for inpatient hospital care (£1.1 billion) and residential care (nearly £900 million)⁶⁴. This demonstrates that having a stroke has serious

consequences for individuals and can require a long process of rehabilitation.

Figure 7 shows that spending on different elements of healthcare varies across the country for people who have a stroke.

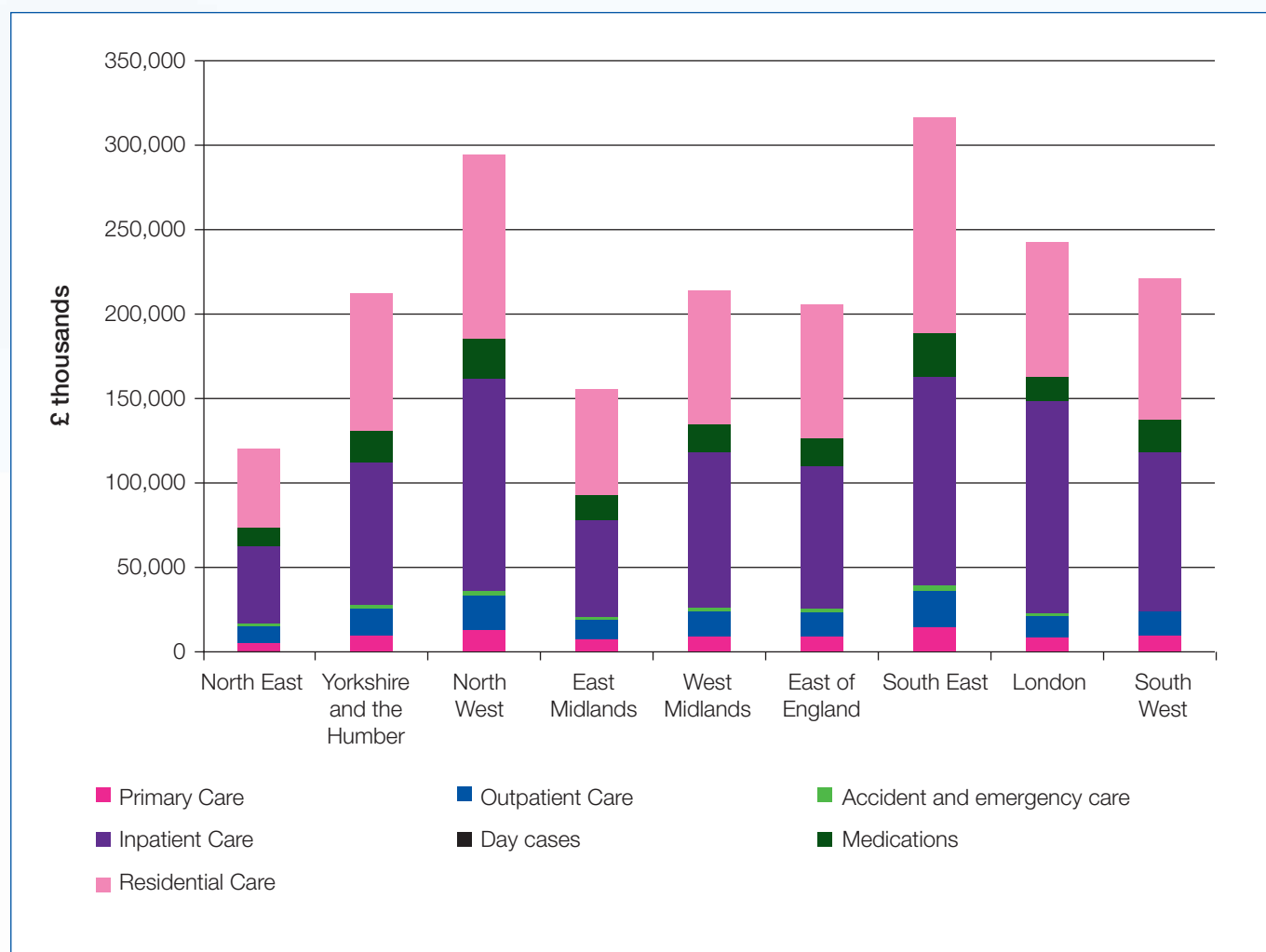


Figure 7: Healthcare cost of stroke by Government Office Region 2006-07⁶⁵

The lowest spending region in terms of total health and social care costs is in the North East and the highest total spender is the South East.

The two most significant categories of spending were for inpatient care at 42% and residential care at 38% of total expenditure⁶⁷. The other 20% of spending was made up from accident and emergency care, primary care, outpatient care and medication combined⁶⁸.

In terms of cost per capita the North East is the biggest spender at £47 compared to London which is the lowest spender per capita at £32⁷⁰.

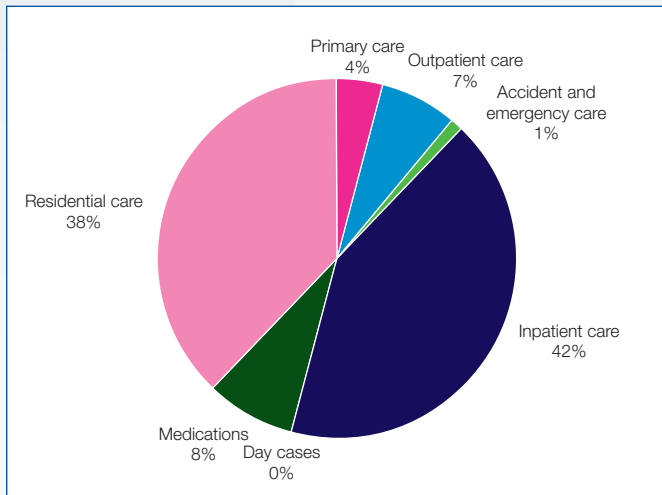


Figure 8: Health and social care cost of stroke in England⁶⁶

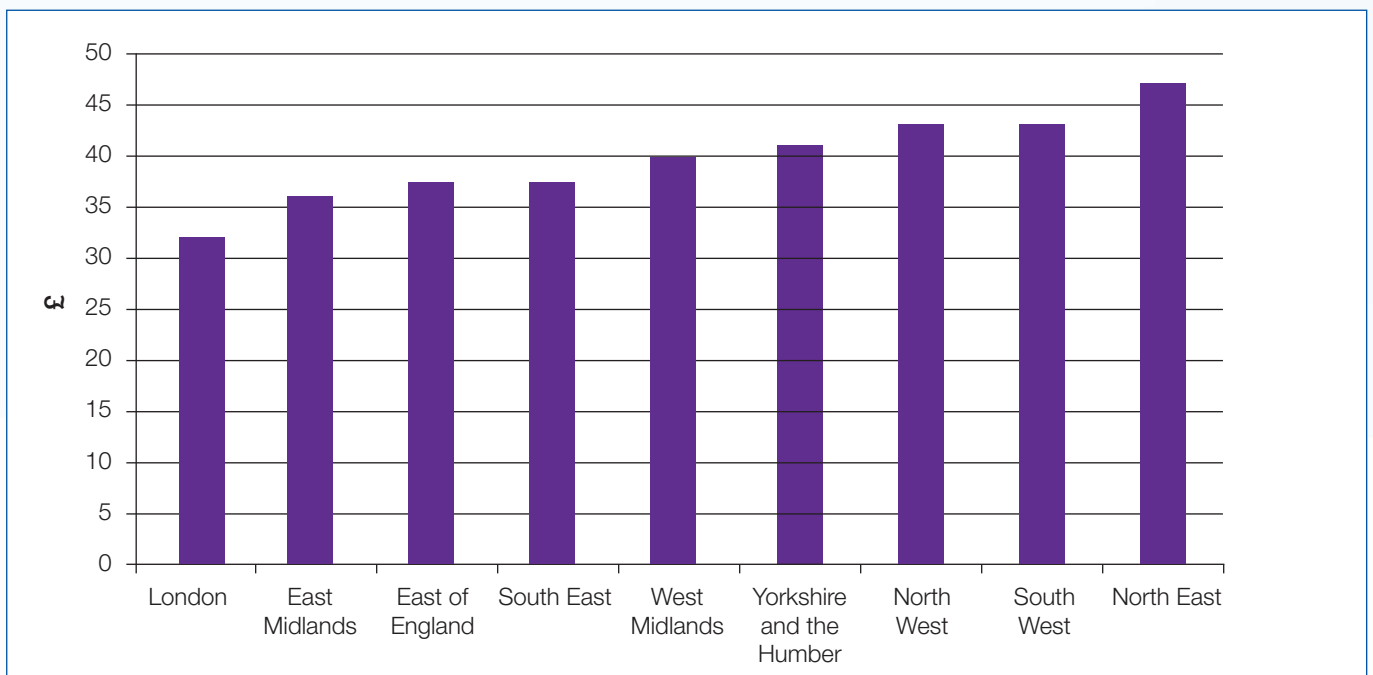


Figure 9: Cost per capita of stroke by Government Office Region 2006/07⁶⁹

Non-healthcare costs

The non-healthcare costs from stroke are also significant. These costs are largely made up of lost productivity from people of working age and the informal care costs of people with the condition. These additional factors equate to over £1 billion in additional costs from stroke⁷¹.

Figure 10 shows how the non-healthcare costs break down across the country.

It is particularly interesting to note the non-health care costs of stroke in relation to informal care. Across all regions in England the cost of informal care in 2006/07 equated to £802,849,000⁷³. This is particularly significant for social care as this informal care, provided by friends

and family members of people who have had a stroke outside of a health or social care setting, could in the future become the responsibility of social care services.

The forthcoming Social Care White Paper should recognise the important role of informal care in supporting people who have suffered from a stroke. However, provision must be made to support carers and to ensure that there is capacity within the social care system for people who require other forms of support. The Government’s commitment to make ‘every contact count’ in healthcare should be extended to include social care. People accessing social care services should be opportunistically assessed for their AF risk and referred on to healthcare as appropriate.

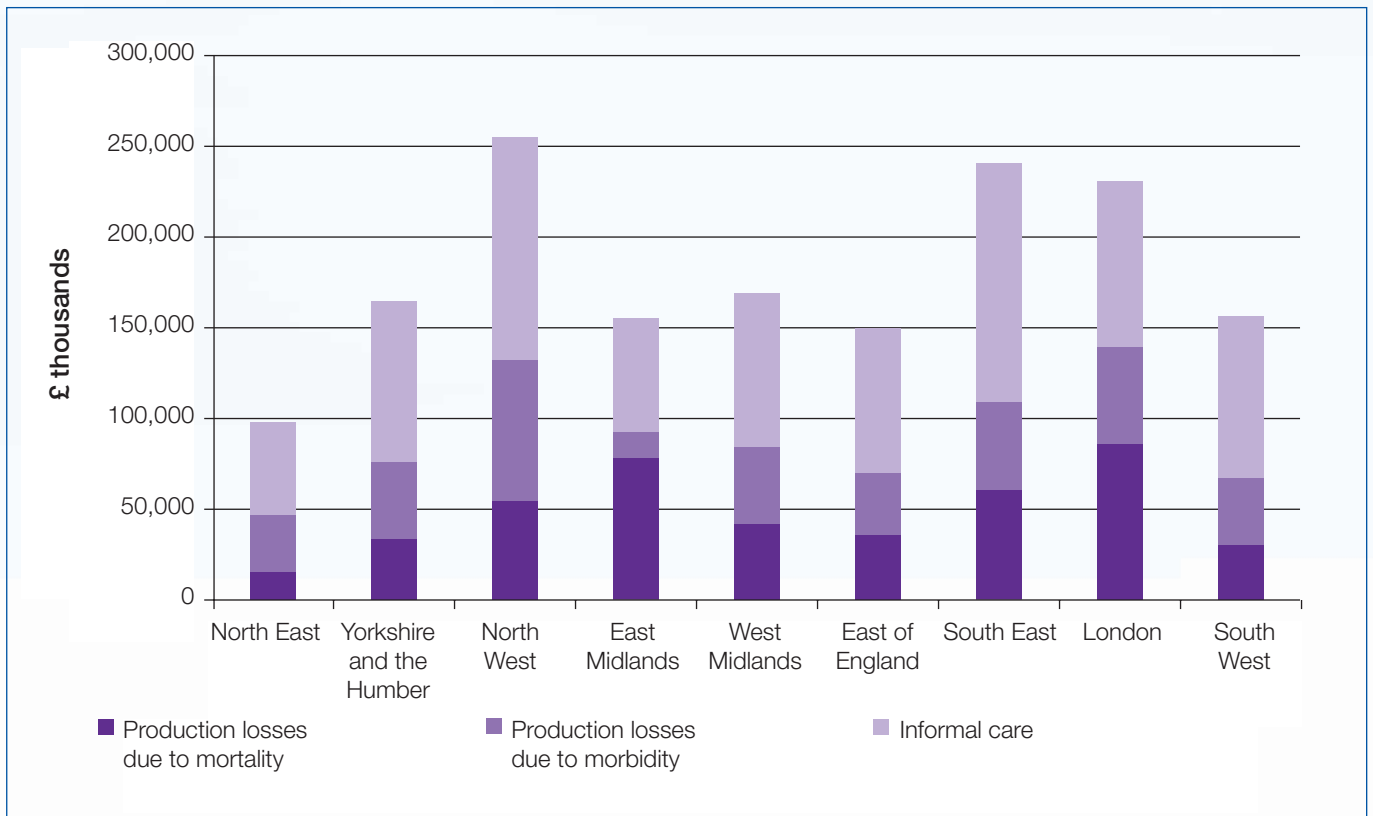


Figure 10: Non-healthcare costs of stroke by Government Office Region, 2006/07⁷²

7. Patient experience

Improving patients' experience of the treatment and care they receive is at the heart of the ambition for NHS services. Under the NHS Constitution, the NHS:

*"... aspires to the highest standards of excellence and professionalism - in the provision of high-quality care that is safe, effective and focused on patient experience."*⁷⁴

This echoes the three defining criteria of quality set out in *High quality care for all*⁷⁵, ensuring that care is safe, that it is effective, and that it provides patients with the most positive experience possible.

Living with AF

Understanding the experience of people living with AF, and the impact that the condition and treatment have on their everyday lives, is essential. Living with AF, and in particular treatment with warfarin, can be very challenging for many people with the condition. The right dose of warfarin varies from person to person, and from time to time, so treatment with warfarin requires regular monitoring to make sure that the patient stays within the right therapeutic range.

According to *Living with Warfarin*⁷⁶, a report produced by the Atrial Fibrillation Association (AFA) and AntiCoagulation Europe (ACE) having surveyed people with AF about their experience, most patients need their warfarin monitored at least every four weeks. A substantial proportion of those questioned by the AFA and ACE attended a monitoring clinic every two weeks, particularly if they were in their first year post-diagnosis⁷⁷. Monitoring generally requires multiple trips to hospital, the GP, or pharmacy-led clinic, taking up to an hour for each trip when travel is factored in. This represents a significant time impact for people living with AF and those who care for them. For people who are of working age, securing time off work to attend regular monitoring appointments may be a challenge.

In addition, people with AF need to be aware of their diet, alcohol intake and other medications to avoid harmful interactions with their warfarin⁷⁸. Indeed, according to *Living with Warfarin*⁷⁹, many people with AF felt that treatment with warfarin had a bigger overall impact on their quality of life than the condition itself. The need for individualised patient dosing and adjustment means that warfarin often therefore has to be supplied in a number of different strengths. This may increase the risk of accidental overdose and requires significant patient education. Many patients, particularly elderly patients and those in care homes, can become confused by administration instructions with potentially fatal consequences.

Healthcare professionals looking after people with AF should discuss the impact that particular treatment regimes are having on patients' experience of everyday life, as well as whether they are effective. People who are finding it difficult to tolerate treatment with warfarin, or who are finding that warfarin is not thinning their blood to the required therapeutic range, should have the opportunity to explore other treatment options.

There is currently no national audit of the experience of people with AF, or indeed of cardiovascular disease. In other disease areas, such as cancer, national surveys have provided an illuminating insight into the issues that matter most to patients. As set out in previous recommendations, the DH should consider developing a national patient experience survey for cardiovascular disease, including people with AF.

Information and support

Given the impact and complexity of treatment with warfarin to reduce the risk of an AF related stroke, it is essential that all people with AF receive the right information and support to understand the risks and consequences of their condition. Understanding that concordance with treatment will reduce their increased risk of stroke is vital for all patients.

However, the *Living with Warfarin*⁸⁰ report indicated that provision of information may be lacking. One in four (25%) patients could not recall receiving any information about AF at diagnosis and, even when information was received, only two thirds (66%) could describe the condition accurately. Of concern, 38% of patients had no idea of any of the risks of AF, and 56% were unaware that AF increases their risk of stroke.

Every person diagnosed with AF should be provided with a full explanation of what this diagnosis means for them, including their increased risk of stroke. This should be supported by appropriate written materials, as well as clear contacts for where they can get further information and seek answers to any questions. Additionally, every person who has had a stroke should be provided with information about secondary prevention of further events, before they are discharged from the care of their stroke unit or hospital.

Anticoagulation Europe, Atrial Fibrillation Association and the Stroke Association have all conducted essential work in this area that should be built on to ensure the needs of all patients are met.

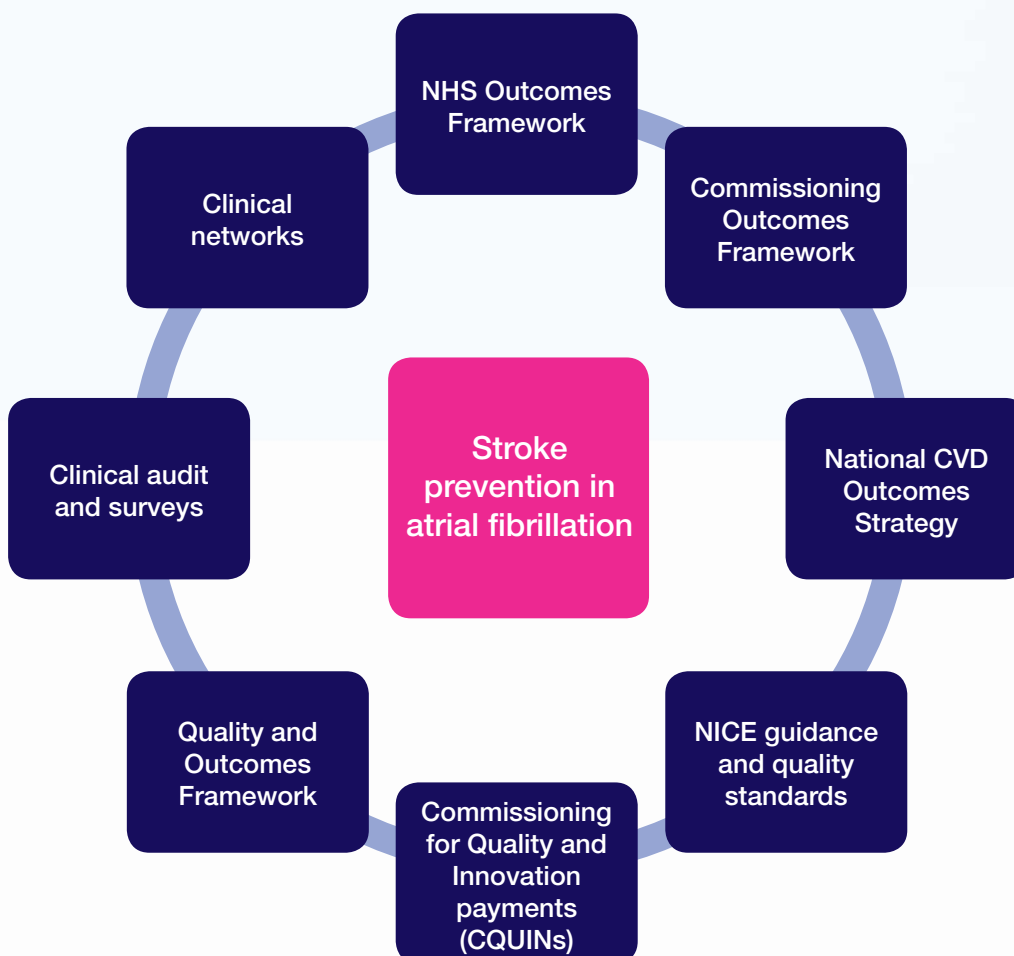
8. Policy context

Cardiovascular disease, in all its forms, remains a major challenge for the NHS. Its personal, economic, NHS and social costs are significant, and it is essential that cardiovascular disease remains a priority in the new health landscape. Bayer supports the ambitions for the future of the health service set out in the Government's White Paper, *Equity and excellence: liberating the NHS*⁸¹, namely that it should remain true to its founding principle of being free at the point of need while also meeting three important priorities:

- Being responsive to patients' needs and wishes, giving them greater choice and control over decisions about their healthcare
- Focussing relentlessly on improving clinical outcomes
- Empowering healthcare professionals to play an active role in shaping and commissioning services

The principles of the NHS reforms provide an opportunity to drive improvements for patients with all forms of cardiovascular disease - including AF. However this will require action at every point of the care pathway and in every care setting. Therefore a variety of policy levers and mechanisms need to be deployed effectively, to incentivise better primary and secondary prevention, acute intervention, and rehabilitation.

The policy opportunities to drive improvements in services for patients with AF under the new health reforms include:



Analysing these levers demonstrates that many are already being deployed to good effect. However, maintaining momentum and ambition is essential against a backdrop of reform and change. More can, and must, be done to capitalise on these opportunities to benefit people with AF as summarised below:

NHS Outcomes Framework - provides a national overview for how well the NHS is performing and provides an accountability mechanism between the Secretary of State and the NHS Commissioning Board. This framework is designed to drive quality improvement and outcome measurement. This could benefit patients with AF because it demonstrates the prioritisation of stroke, as it has been translated into improvement indicators including 'improving recovery from stroke' and 'reducing under-75 mortality from cardiovascular disease'⁸². A national focus on stroke will be helpful in terms of ensuring that service providers are held to account for their performance in this area, including prevention. However, the Department of Health should look to develop more specific indicators, which would have the potential to further improve outcomes for patients with AF at risk of a stroke.

Commissioning Outcomes Framework (COF) - provides an overview of clinical commissioning groups' (CCGs) contribution to the delivery of the NHS Outcomes Framework and offers an accountability mechanism to patients and the local community. Results from the COF will also allow CCGs to benchmark their performance against others. Provisional COF indicators, of relevance to AF, include 'under-75 mortality rate from cardiovascular disease'. Given the higher mortality rate for AF induced stroke, this focus on mortality should encourage action on better management of AF. Prevention and early identification and management of risk factors are included separately in the COF in the indicator 'health-related quality of life for people with long-term conditions'. The inclusion of broad indicators on patient experience is welcome, but the inclusion of a specific improvement indicator for cardiovascular disease patient experience would be a step forward. The Department of Health should review the potential for strengthening recommendations on capturing the experience of people living with all forms of cardiovascular disease including AF.

Cardiovascular Disease Outcomes Strategy - will be put in place to ensure the joined up delivery of cardiovascular disease services across public health, NHS and social care services. This new strategy will build on the 2007 National Stroke Strategy which provided a quality framework to secure improvements to stroke services, defined markers for high quality stroke care, and set out a vision for a ten-year period⁸³. Ensuring that the Cardiovascular Disease Outcomes Strategy includes AF will be important in its prioritisation by the Government and, therefore the health service, in the future. The Department of Health should explicitly include AF – recognizing the unique issues faced by patients with the condition – in the forthcoming national Cardiovascular Disease Outcomes Strategy. This would encourage greater focus on this high risk group of patients.

NICE guidance - Clinical Guideline CG36 'the management of atrial fibrillation' makes recommendations for the tests that should be used to diagnose AF and the treatment that people can expect to be offered. NICE guideline set clear expectations for how people with AF will be diagnosed, treated and followed up. The guidance is supported by an anti-coagulation therapy service commissioning guide. However, despite the guidance and supporting tools, it is recognised that the current treatment of people with AF is sub-optimal⁸⁴. NICE should ensure that the clinical guidance reflects developments in technologies to support people living with AF, and commissioners and providers should ensure that local delivery reflects the recommendations made by NICE.

NICE quality standards - set out aspirational, but achievable, markers of high-quality, cost-effective patient care, covering the treatment and prevention of different diseases and conditions. A stroke quality standard was one of the first standards to be developed but did not include measures focussed on secondary prevention. A quality standard for AF has been referred to NICE for development and will help ensure that appropriate indicators and proxies for outcomes are set for AF. NICE should prioritise development of the quality standard for AF, given the impact of the condition, the size of the at-risk population, and the synergies between improvements in management of AF and other forms of cardiovascular disease.

Commissioning for Quality and Innovation (CQUIN)

payments - allow commissioners to reward excellence by paying providers who achieve quality improvement goals. There are currently national, regional and local CQUIN indicators, but it is not clear if regional CQUINs will remain in the new landscape. There is encouraging evidence that providers are developing local CQUINs on cardiovascular disease care such as preventing re-admissions for patients after a cardiovascular disease event. Commissioners should consider developing local CQUINs relevant to AF, to encourage enhanced prevention and management of the condition.

Quality and Outcomes Framework - rewards GP practices financially for the provision of good quality care and drives improvements in primary care services. AF is already recognised in the QOF, through indicators on AF assessment and receipt of anticoagulation therapies. QOF indicators for AF could be expanded in a number of helpful ways, for example, development of an indicator which assesses a patient's performance on anticoagulants would be welcome given that many patients find it hard to tolerate warfarin (the current standard of care). NICE should consider expanding the indicators in the QOF or reallocating existing QOF points to incentivise continued improvements in identification and management of AF in primary care.

Clinical audit and surveys - from 2012 it is likely that there will be a national prospective stroke audit, covering information needed by NICE, the Stroke Improvement Programme, Department of Health Vital Signs and the NHS Outcomes Framework. There are little data on the management and experience of AF patients gathered routinely across the NHS. A national audit for AF would enable commissioners to benchmark the performance of AF services and outcomes for patients. Ideally, this would link through to relevant datasets such as those relevant to stroke services and outcomes. The Department of Health should consider the introduction of a national audit for AF, linked to other relevant datasets.

Alongside this there is no national survey of the experience of patients with cardiovascular disease - unlike other major conditions, such as cancer. The experience of patients with cardiovascular disease in general, and AF specifically, is poorly understood. A National Patient Experience Survey for cardiovascular disease - including people with AF - would help the NHS to improve its understanding of the experience of people living with cardiovascular disease. The Department of Health and the NHS Information Centre should pilot a National Patient Experience Survey for cardiovascular disease which includes people living with all forms of the disease, including AF.

Clinical networks - drive improvements in the quality of outcomes, by ensuring that coordination takes place and providing specialist advice on commissioning. The Department of Health is currently considering how clinical and professional networks should be embedded into the new system, including their future role and function. The future of the 14 or 15 cardiac and stroke networks which provide specialist commissioning support is currently unclear as the role and responsibilities of clinical networks have not been agreed. The NHS Commissioning Board should clearly set out the anticipated role and governance arrangements for stroke and cardiac networks so that they are enabled to support improvements in outcomes for patients with all forms of cardiovascular disease, including AF.

Therefore, there is still a job to be done in shaping and translating the principles of reform into meaningful change on the ground for people with AF. The Department of Health team developing the Cardiovascular Disease Outcomes Strategy should consider each of the levers, above, to explore how the identification of patients with AF can be improved and their outcomes enhanced through better management of their condition.

9. Data annex

PCT level data

NB: PCTs in **green** represent the best performing 20%, PCTs in **red** represent the worst performing 20%, and PCTs in **black** represent the median 60%.

PCT	Atrial fibrillation prevalence on QOF disease registers, 2010/11 ⁸⁵	Stroke emergency admission rates (DSR), per 100,000, 2010/11 ⁸⁶	% of emergency readmission for patients with stroke, 2010/11 ⁸⁷	Achievement against QOF AF 3, 2010/11 ⁸⁸	Achievement against QOF AF 4, 2010/11 ⁸⁹	Achievement against QOF Stroke 12, 2010/11 ⁹⁰
Ashton, Leigh & Wigan PCT	1.5%	88.34	2.6%	94.8%	97.7%	94.4%
Barking & Dagenham PCT	0.8%	109.45	2.2%	95.1%	97.1%	94.3%
Barnet PCT	1.1%	104.58	11.2%	92.7%	96.1%	93.7%
Barnsley PCT	1.6%	121.90	1.9%	94.1%	94.7%	94.0%
Bassetlaw PCT	1.8%	71.93	1.4%	94.3%	97.0%	93.5%
Bath & North East Somerset PCT	1.7%	82.61	2.0%	94.6%	96.2%	95.7%
Bedfordshire PCT	1.4%	78.26	3.0%	93.5%	96.7%	93.3%
Berkshire East PCT	1.1%	88.05	3.7%	93.5%	96.2%	93.4%
Berkshire West PCT	1.2%	87.18	1.4%	93.1%	96.3%	93.3%
Bexley Care Trust	1.3%	80.66	5.2%	94.3%	95.3%	92.9%
Birmingham East & North PCT	1.3%	92.67	1.9%	93.9%	96.1%	94.8%
Blackburn with Darwen PCT	1.1%	100.84	1.2%	94.3%	96.2%	95.6%
Blackpool PCT	1.6%	82.79	2.6%	94.4%	95.0%	94.0%
Bolton PCT	1.2%	104.40	3.6%	94.4%	96.1%	93.7%
Bournemouth & Poole PCT	1.8%	85.31	2.8%	94.2%	97.2%	94.5%
Bradford and Airedale PCT	1.2%	91.85	1.9%	94.2%	96.5%	94.2%
Brent PCT	0.6%	106.53	7.6%	94.5%	96.2%	94.5%
Brighton and Hove City Teaching PCT	1.2%	82.52	2.6%	93.5%	94.6%	93.6%
Bristol PCT	1.2%	117.03	2.9%	93.1%	95.7%	93.6%
Bromley PCT	1.5%	82.04	8.5%	93.1%	94.6%	92.6%
Buckinghamshire PCT	1.5%	73.65	1.9%	93.0%	96.1%	92.9%
Bury PCT	1.3%	80.61	2.8%	94.4%	97.8%	94.8%
Calderdale PCT	1.3%	98.83	1.0%	92.6%	96.1%	92.6%
Cambridgeshire PCT	1.5%	70.57	2.0%	93.5%	95.9%	93.5%
Camden PCT	0.9%	85.53	5.0%	93.6%	96.1%	94.5%
Central & Eastern Cheshire PCT	1.8%	70.65	2.3%	92.9%	96.1%	93.1%
Central Lancashire PCT	1.4%	95.73	2.0%	92.8%	96.1%	93.7%
City and Hackney PCT	0.6%	135.74	15.8%	93.1%	95.4%	93.6%
Cornwall & Isles Of Scilly PCT	1.9%	78.66	2.7%	94.3%	96.7%	93.6%
County Durham PCT	1.6%	96.30	4.3%	94.2%	96.4%	93.8%
Coventry PCT	1.2%	78.88	0.6%	94.3%	95.9%	93.8%
Croydon PCT	0.9%	92.16	10.1%	93.5%	96.4%	93.3%
Cumbria PCT	1.8%	95.68	1.6%	92.6%	95.9%	93.5%
Darlington PCT	1.6%	91.85	5.1%	94.6%	98.2%	94.5%
Derby City PCT	1.3%	72.01	2.7%	94.5%	97.5%	93.5%
Derbyshire County PCT	1.7%	78.60	3.3%	94.4%	95.5%	93.3%
Devon PCT	2.1%	72.83	2.9%	94.0%	96.2%	94.0%

PCT	Atrial fibrillation prevalence on QOF disease registers, 2010/11 ⁸⁵	Stroke emergency admission rates (DSR), per 100,000, 2010/11 ⁸⁶	% of emergency readmission for patients with stroke, 2010/11 ⁸⁷	Achievement against QOF AF 3, 2010/11 ⁸⁸	Achievement against QOF AF 4, 2010/11 ⁸⁹	Achievement against QOF Stroke 12, 2010/11 ⁹⁰
Doncaster PCT	1.7%	74.30	2.3%	93.7%	96.5%	94.1%
Dorset PCT	2.3%	65.93	2.3%	93.7%	96.5%	95.0%
Dudley PCT	1.8%	66.46	1.9%	93.8%	96.9%	94.1%
Ealing PCT	0.8%	98.52	8.3%	94.2%	96.9%	94.4%
East Lancashire PCT	1.3%	87.64	3.2%	94.0%	96.0%	93.7%
East Riding Of Yorkshire PCT	1.9%	79.50	0.4%	93.8%	96.6%	92.9%
East Sussex Downs & Weald PCT	2.2%	75.48	1.8%	92.5%	95.5%	93.6%
Eastern & Coastal Kent PCT	1.8%	88.72	2.8%	93.4%	96.1%	94.0%
Enfield PCT	1.0%	93.31	6.5%	93.8%	96.3%	93.9%
Gateshead PCT	1.6%	89.58	3.7%	93.3%	95.3%	93.9%
Gloucestershire PCT	1.7%	71.17	2.2%	93.8%	96.4%	94.6%
Great Yarmouth & Waveney Teaching PCT	1.9%	90.04	4.4%	92.5%	95.9%	92.8%
Greenwich PCT	0.8%	115.74	4.6%	94.1%	97.0%	93.6%
Halton and St Helens PCT	1.6%	89.41	3.0%	94.3%	96.8%	94.3%
Hammersmith & Fulham PCT	0.8%	81.45	2.8%	93.2%	93.6%	93.4%
Hampshire PCT	1.6%	72.67	2.4%	93.1%	96.3%	93.4%
Haringey PCT	0.6%	137.49	5.9%	93.9%	95.8%	94.5%
Harrow PCT	1.1%	77.66	1.5%	94.0%	94.4%	93.8%
Hartlepool PCT	1.6%	100.61	3.6%	94.3%	96.8%	94.6%
Hastings and Rother PCT	2.1%	89.54	4.5%	93.1%	95.5%	94.6%
Havering PCT	1.3%	68.58	1.2%	95.5%	96.7%	96.4%
Heart Of Birmingham PCT	0.5%	119.66	4.2%	95.3%	96.0%	95.9%
Herefordshire PCT	1.9%	81.94	2.5%	93.4%	95.9%	93.0%
Hertfordshire PCT	1.4%	69.12	3.7%	93.3%	95.8%	93.4%
Heywood, Middleton & Rochdale PCT	1.2%	104.49	4.6%	93.6%	96.0%	93.9%
Hillingdon PCT	1.1%	93.99	3.1%	94.1%	94.7%	92.9%
Hounslow PCT	0.8%	92.24	3.9%	94.2%	95.5%	95.4%
Hull Teaching PCT	1.2%	112.45	1.1%	93.8%	95.7%	93.0%
Isle of Wight PCT	1.9%	92.52	2.5%	93.9%	97.7%	93.5%
Islington PCT	0.8%	123.36	6.5%	93.9%	97.2%	95.0%
Kensington & Chelsea PCT	0.9%	58.21	3.2%	91.1%	89.8%	93.3%
Kingston PCT	1.0%	60.42	10.6%	93.8%	95.4%	94.4%
Kirklees PCT	1.2%	93.72	1.4%	93.7%	96.2%	93.2%
Knowsley PCT	1.5%	91.49	1.6%	94.3%	97.8%	94.3%
Lambeth PCT	0.5%	121.98	4.6%	93.7%	97.1%	92.9%
Leeds PCT	1.3%	79.49	1.1%	93.8%	96.5%	93.6%
Leicester City PCT	0.9%	90.74	3.4%	94.5%	95.8%	94.4%
Leicestershire County & Rutland PCT	1.6%	63.52	2.4%	93.9%	95.7%	94.6%
Lewisham PCT	0.7%	108.89	3.7%	92.6%	94.7%	91.0%
Lincolnshire PCT	1.7%	88.56	2.7%	93.6%	95.6%	93.5%
Liverpool PCT	1.4%	93.19	1.3%	94.2%	95.9%	94.6%

PCT	Atrial fibrillation prevalence on QOF disease registers, 2010/11 ⁸⁵	Stroke emergency admission rates (DSR), per 100,000, 2010/11 ⁸⁶	% of emergency readmission for patients with stroke, 2010/11 ⁸⁷	Achievement against QOF AF 3, 2010/11 ⁸⁸	Achievement against QOF AF 4, 2010/11 ⁸⁹	Achievement against QOF Stroke 12, 2010/11 ⁹⁰
Luton PCT	0.9%	73.06	2.5%	92.5%	91.8%	93.4%
Manchester PCT	0.9%	127.05	3.7%	93.2%	95.5%	93.7%
Medway PCT	1.2%	77.21	4.8%	95.5%	97.8%	94.6%
Mid Essex PCT	1.4%	71.16	0.6%	93.7%	95.4%	93.3%
Middlesbrough PCT	1.3%	116.21	1.1%	93.9%	95.7%	93.0%
Milton Keynes PCT	0.9%	71.00	2.7%	91.6%	97.0%	94.1%
Newcastle PCT	1.2%	94.11	3.3%	94.2%	96.8%	95.5%
Newham PCT	0.4%	172.74	16.3%	94.7%	97.2%	95.2%
Norfolk PCT	1.9%	81.15	2.1%	93.3%	95.9%	93.3%
North East Essex PCT	1.8%	85.99	1.5%	93.6%	94.3%	92.9%
North East Lincolnshire Care Trust	1.7%	70.96	2.2%	94.3%	96.0%	93.7%
North Lancashire PCT	1.9%	82.99	2.9%	92.9%	96.2%	93.2%
North Lincolnshire PCT	1.6%	59.60	1.2%	94.1%	97.1%	92.9%
North Somerset PCT	2.1%	87.51	2.6%	93.0%	95.8%	92.8%
North Staffordshire PCT	1.8%	96.55	3.4%	94.3%	96.2%	94.8%
North Tyneside PCT	1.6%	120.09	2.7%	93.6%	96.4%	94.4%
North Yorkshire and York PCT	1.8%	79.71	2.2%	94.1%	96.6%	93.8%
Northamptonshire PCT	1.4%	90.71	1.8%	93.8%	96.3%	94.1%
Northumberland Care Trust	1.8%	95.32	2.1%	93.3%	97.6%	94.4%
Nottingham City PCT	1.0%	95.03	2.2%	94.1%	95.7%	93.3%
Nottinghamshire County PCT	1.6%	81.86	2.8%	94.6%	96.5%	94.0%
Oldham PCT	1.0%	105.97	2.5%	93.6%	97.6%	93.1%
Oxfordshire PCT	1.4%	74.80	1.3%	93.4%	96.1%	94.1%
Peterborough PCT	1.0%	97.00	1.8%	93.7%	95.5%	93.1%
Plymouth PCT	1.5%	99.97	2.7%	94.7%	97.7%	94.2%
Portsmouth City PCT	1.4%	81.17	2.0%	92.9%	95.8%	94.3%
Redbridge PCT	0.8%	88.04	6.1%	93.7%	93.9%	94.4%
Redcar & Cleveland PCT	1.6%	91.60	3.8%	94.8%	96.8%	94.6%
Richmond & Twickenham PCT	1.2%	69.88	7.3%	92.7%	95.5%	94.4%
Rotherham PCT	1.5%	99.74	3.1%	93.8%	95.8%	93.7%
Salford PCT	1.4%	111.88	1.7%	94.5%	96.1%	94.3%
Sandwell PCT	1.4%	84.79	0.8%	93.5%	96.3%	94.2%
Sefton PCT	1.9%	71.90	1.6%	93.3%	95.7%	93.8%
Sheffield PCT	1.6%	97.36	3.5%	92.9%	95.3%	93.4%
Shropshire County PCT	1.9%	87.64	3.5%	93.2%	96.1%	92.6%
Solihull Care Trust	1.7%	78.10	2.8%	94.6%	97.1%	94.3%
Somerset PCT	2.0%	79.04	2.2%	93.8%	96.1%	94.2%
South Birmingham PCT	1.3%	78.90	2.4%	94.1%	97.3%	93.8%
South East Essex PCT	1.6%	88.34	3.1%	93.6%	95.2%	91.8%
South Gloucestershire PCT	1.6%	82.10	3.5%	92.0%	95.8%	92.7%
South Staffordshire PCT	1.6%	77.71	2.1%	93.4%	96.3%	93.2%

PCT	Atrial fibrillation prevalence on QOF disease registers, 2010/11 ⁸⁵	Stroke emergency admission rates (DSR), per 100,000, 2010/11 ⁸⁶	% of emergency readmission for patients with stroke, 2010/11 ⁸⁷	Achievement against QOF AF 3, 2010/11 ⁸⁸	Achievement against QOF AF 4, 2010/11 ⁸⁹	Achievement against QOF Stroke 12, 2010/11 ⁹⁰
South Tyneside PCT	1.7%	77.40	1.0%	93.5%	96.0%	93.7%
South West Essex PCT	1.3%	74.97	1.9%	93.2%	93.0%	91.3%
Southampton City PCT	1.2%	93.30	1.3%	93.1%	96.4%	94.3%
Southwark PCT	0.6%	106.44	5.7%	93.8%	96.6%	94.0%
Stockport PCT	1.6%	93.63	1.7%	94.1%	97.3%	93.8%
Stockton-on-Tees Teaching PCT	1.7%	100.30	2.9%	93.6%	95.0%	93.3%
Stoke On Trent PCT	1.5%	112.14	3.2%	93.6%	95.4%	93.9%
Suffolk PCT	1.7%	91.42	1.9%	93.0%	95.4%	93.5%
Sunderland PCT	1.6%	97.89	0.5%	93.4%	96.9%	94.5%
Surrey PCT	1.5%	76.95	4.0%	93.4%	94.8%	93.2%
Sutton and Merton PCT	1.0%	79.82	3.6%	93.4%	95.3%	93.9%
Swindon PCT	1.3%	75.41	1.1%	93.7%	95.5%	93.6%
Tameside & Glossop PCT	1.4%	122.37	3.6%	93.4%	95.9%	92.7%
Telford & Wrekin PCT	1.3%	101.87	1.8%	92.6%	97.1%	92.7%
Torbay Care Trust	2.1%	93.27	5.3%	94.3%	97.1%	94.2%
Tower Hamlets PCT	0.5%	116.13	5.1%	93.9%	97.2%	94.2%
Trafford PCT	1.5%	87.18	4.7%	93.3%	96.4%	94.0%
Wakefield District PCT	1.6%	95.67	1.2%	93.4%	96.5%	92.7%
Walsall Teaching PCT	1.5%	105.39	1.1%	94.6%	96.1%	94.5%
Waltham Forest PCT	0.7%	110.81	6.5%	94.2%	96.1%	94.5%
Wandsworth PCT	0.7%	83.58	3.5%	92.6%	95.6%	93.8%
Warrington PCT	1.5%	96.53	2.8%	93.3%	96.8%	93.1%
Warwickshire PCT	1.6%	73.99	1.0%	93.3%	97.0%	94.0%
West Essex PCT	1.5%	84.94	6.0%	93.1%	93.9%	92.0%
West Kent PCT	1.6%	71.76	2.0%	93.3%	96.2%	93.5%
West Sussex PCT	1.9%	77.16	3.7%	92.5%	96.1%	93.5%
Western Cheshire PCT	1.8%	73.52	2.5%	93.3%	96.3%	93.8%
Westminster PCT	0.9%	96.92	12.8%	92.9%	93.0%	93.6%
Wiltshire PCT	1.7%	80.81	1.7%	94.2%	96.5%	94.2%
Wirral PCT	1.9%	109.52	2.9%	93.3%	95.2%	93.0%
Wolverhampton City PCT	1.4%	85.80	1.5%	93.2%	96.8%	93.5%
Worcestershire PCT	1.7%	74.03	1.9%	92.9%	96.3%	92.9%

Government Office Region level data

Government Office Region	Production losses due to stroke mortality, £ thousands, 2006/07 ⁹¹	Production losses due to stroke morbidity, £ thousands, 2006/07 ⁹²	Primary care cost of stroke, £ thousands, 2006/07 ⁹³	Outpatient care cost of stroke, £ thousands, 2006/07 ⁹⁴	Cost of accident and emergency care for stroke, £ thousands, 2006/07 ⁹⁵	Inpatient care cost of stroke, £ thousands, 2006/07 ⁹⁶	Day cases cost of stroke, £ thousands, 2006/07 ⁹⁷	Medications cost of stroke, £ thousands, 2006/07 ⁹⁸	Residential care cost of stroke, £ thousands, 2006/07 ⁹⁹	Total health and social care costs cost of stroke, £ thousands, 2006/07 ¹⁰⁰	Cost per capita of stroke, £ thousands, 2006/07 ¹⁰¹
North East	14,911	31,506	5,262	9,914	1,165	46,865	45	10,114	46,553	119,918	47
Yorkshire and the Humber	33,096	42,234	9,270	15,935	2,037	85,037	55	17,818	82,001	212,152	41
North West	54,915	76,921	12,345	20,804	2,640	125,396	23	23,345	109,206	293,758	43
East Midlands	31,394	31,342	7,212	11,744	1,668	57,301	55	13,771	63,798	155,549	36
West Midlands	41,946	41,881	8,954	15,093	1,849	91,693	7	16,832	79,211	213,638	40
East of England	35,419	33,909	9,022	14,522	1,904	83,848	28	16,363	79,811	205,498	37
South East	60,075	48,947	14,410	21,450	3,153	124,040	51	25,431	127,477	316,012	38
London	85,490	53,107	8,974	12,154	1,452	125,916	76	14,327	79,384	242,284	32
South West	30,479	36,870	9,606	14,503	2,244	91,717	6	18,165	84,973	221,215	43

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