

Costed Integrated Patient Scenario

James's Story of Atrial Fibrillation

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There are, on average, 40 AF-related strokes every day in England. People with AF are five times more likely to have a stroke than people without AF, and while more than 1.4 million people are living with AF there is an estimated 425,000 undiagnosed and therefore not receiving anticoagulation therapy or being treated for the irregular heart rhythm disorder.

James' s story illustrates how small changes to the way we work can have big impacts, on people's lives and on healthcare utilisation and cost. Making every contact count, for people at risk of AF a simple pulse check can make a big difference in detection. Rapid adoption of evidence-based innovation can assist in early diagnosis, prevention of AF-related stroke with anticoagulation therapy and access to appropriate treatment. Supporting the wider primary care team in building engagement and activating 'at risk' patients to be experts in their own health care, and optimising therapies ensures protection from AF-related stroke. Where integrated multidisciplinary working across the whole team – primary, secondary, tertiary and community care – by sharing data and information, helps to manage and support patients in the appropriate setting, avoiding devastating AF-related strokes and freeing up hospital resources to manage elective and acute care.

In an environment with significant backlogs in people identified as at risk of AF, overburdened hospital services, and financial constraint, this sliding doors alternative scenario is a 'call to action' for local healthcare clinical and service development teams alongside patient representatives and advocacy groups to review current pathways co-producing plans. These can have significant impact on all current priorities helping meet the NHS Long Term Plan objectives for cardiovascular disease in early detection and treatment of CVD, where 100 people with AF are identified and receive anticoagulation therapy, an average of four AF-related strokes are averted, preventing serious disability or even death.

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Founder & CEO at Arrhythmia Alliance, AF Association & STARS



Atrial fibrillation (AF) is the most common cardiac arrhythmia, which can cause blood clots to form in the heart and which in turn puts people at five times the risk of embolic stroke compared to people without AF.

The cause of AF is not fully understood but its prevalence increases with age and it is more prevalent among men than women¹. Certain ethnicities and other long-term conditions such as existing cardiovascular disease (CVD), chronic obstructive pulmonary disease (COPD) and chronic kidney disease are also likely to increase the chance of someone developing AF².

Public Health England estimates that 425,000 people in England have undiagnosed AF³. Some people do not experience symptoms, which increases the likelihood of their AF remaining undiagnosed and places them at a greater risk of stroke.

Anticoagulation is an effective therapy for managing stroke risk in AF, reducing it by up to 66%¹. However, many patients are not being treated or are on ineffective/suboptimal treatment¹. In 2021, 94,000 people identified at risk of AF stroke in England were not receiving anticoagulation⁵. Strokes caused by AF are more likely to be fatal or leave a person with a severe disability than strokes in people without AF. In 2017/18, of those with AF who had a stroke and were not anticoagulated, 26% died¹.

Excepting COVID-19, stroke is the one of the largest causes of death after ischaemic heart disease, dementia and Alzheimer's, cancer and respiratory disease⁶. Despite this, a comprehensive study investigating AF epidemiology, healthcare utilisation and outcomes is lacking⁷.

CVD was made a priority in 2019's NHS Long Term Plan⁸, with the ambition of preventing 150,000 strokes, heart attacks and cases of dementia over the next 10 years. The focus of the Long Term Plan is on early detection so that people can be offered prompt treatment. Through proactive case finding, for every 100 people with AF who are identified and receive anticoagulation medication, an average of four strokes are averted⁸.

AF statistics

- AF causes 20% of strokes⁴.
- There are 40 AF-related strokes a day on average in England¹.
- AF prevalence ranges from 0–28% of the population at GP level, depending on the demographic profile¹.
- 425,000 people are estimated to have undiagnosed AF in England³.
- Anticoagulation can reduce stroke risk in AF by up to 66%¹.

The National CVD Prevention Senior Leadership Forum developed a set of ambitions focused on improved detection and management of an 'ABC' of three high-risk conditions: AF, high blood pressure (hypertension) and high cholesterol¹. The goal is that by 2029, 85% of expected AF cases are detected and 90% of people at risk of AF stroke are adequately anticoagulated¹.

Significant progress has been made in raising awareness of AF within primary care in recent years. Both detection and management of AF have increased nationally, preventing hundreds of avoidable strokes and deaths⁹.

Unfortunately, COVID-19 has hindered CVD prevention efforts. Risk factors are often picked up opportunistically during face-to-face appointments, but these interactions have reduced significantly, and for people already identified as having CVD risk factors, delayed appointments due to resource demand, may have reduced the number of people receiving optimal therapy. New diagnoses of CVD and prescribing of new cardiovascular medications have fallen in the UK. Furthermore, lockdown led to reduced physical activity levels and a poorer diet for many people, as well as exacerbating existing health inequalities.

Impact of COVID-19

- During the first year of the pandemic there was a missed incidence of 26%¹¹.
- A recent UK study in a deprived urban population showed a 43% reduction in new diagnoses of CVD between March and May 2020 and a 30–54% decrease in the prescription of new cardiovascular medications during the same period¹².

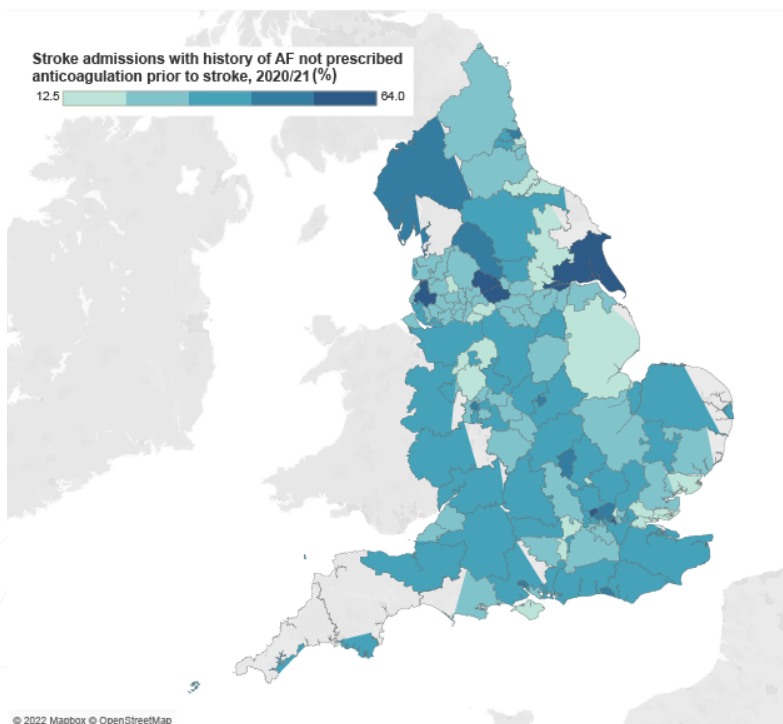


Figure 1. Stroke admissions with history of AF not prescribed anticoagulation prior to stroke 2020/21¹⁰

This case study uses a Delphi-style consensus process involving experts in this specialist field alongside an economic analysis methodology.

This process was modified from the Long Term Condition Scenarios¹³ developed by NHS RightCare, which uses a fictitious, but realistic average patient journey as an agreed consensus by the expert panel which is compared with an optimal care journey to highlight potential care improvement opportunities.

Use of behavioural methodology drives engagement through the combination of objective clinical data, clinical expertise and financial analysis wrapped in a journalistic style. The study includes prompts for service transformation leads to consider when evaluating their local health economy.

The goal is to inspire more stakeholders to take note and act towards positive change by thinking strategically and collaboratively about engagement, education and designing optimal care for people with AF.

Look out for red highlight boxes to see typical suboptimal pinch points in many pathways throughout the country.

Look out for green highlight boxes to see best practice points which are above and beyond current recommended optimal practice, and which are already being trialled in some care pathways across the country.

Meet James

- James is 70 and lives in South London with his wife Bernice.
- They are retired but top up their state pension with part-time jobs: James works as a taxi driver and Bernice works in a local supermarket.
- They get by financially, and although this year has been tight, with the two incomes they manage.
- The centre of their life is their new great granddaughter, Ava. They missed the first year of her life due to social distancing, so now take every opportunity to see her and their daughter Jade.
- James is a keen Crystal Palace FC supporter and regularly watches the match at the pub with his mates, enjoying the odd trip to Selhurst Park when he can get a ticket.



Goals and values

To create a realistic patient profile, the following goals, values, challenges and engagement difficulties for James were defined below:

Goals and values	Challenges and pain points	Engagement difficulties, objections
Hardworking	Needs top up income on pension	Self-reliant
Friends important	Children and grandchildren important	Does not engage well with own health
Avid football follower	Children are all working and rely on James for a significant amount of childcare support	Does not trust much in medicine (took a long time to get COVID-19 vaccination)

Drinks too much at weekends but is pleased with himself for not drinking in the week

Overview: James's AF care pathway

The diagram below gives an overview of our fictitious patient James's journey with AF. We have used this full journey to compare the typical features of an optimal and a suboptimal care pathway for a patient like James and give a comparison of the costs associated with these different scenarios. Figure 2 highlights the typical failure points and elements of best practice that can occur.

Figure 2. Overview of James's AF pathway

Suboptimal scenario

Optimal scenario

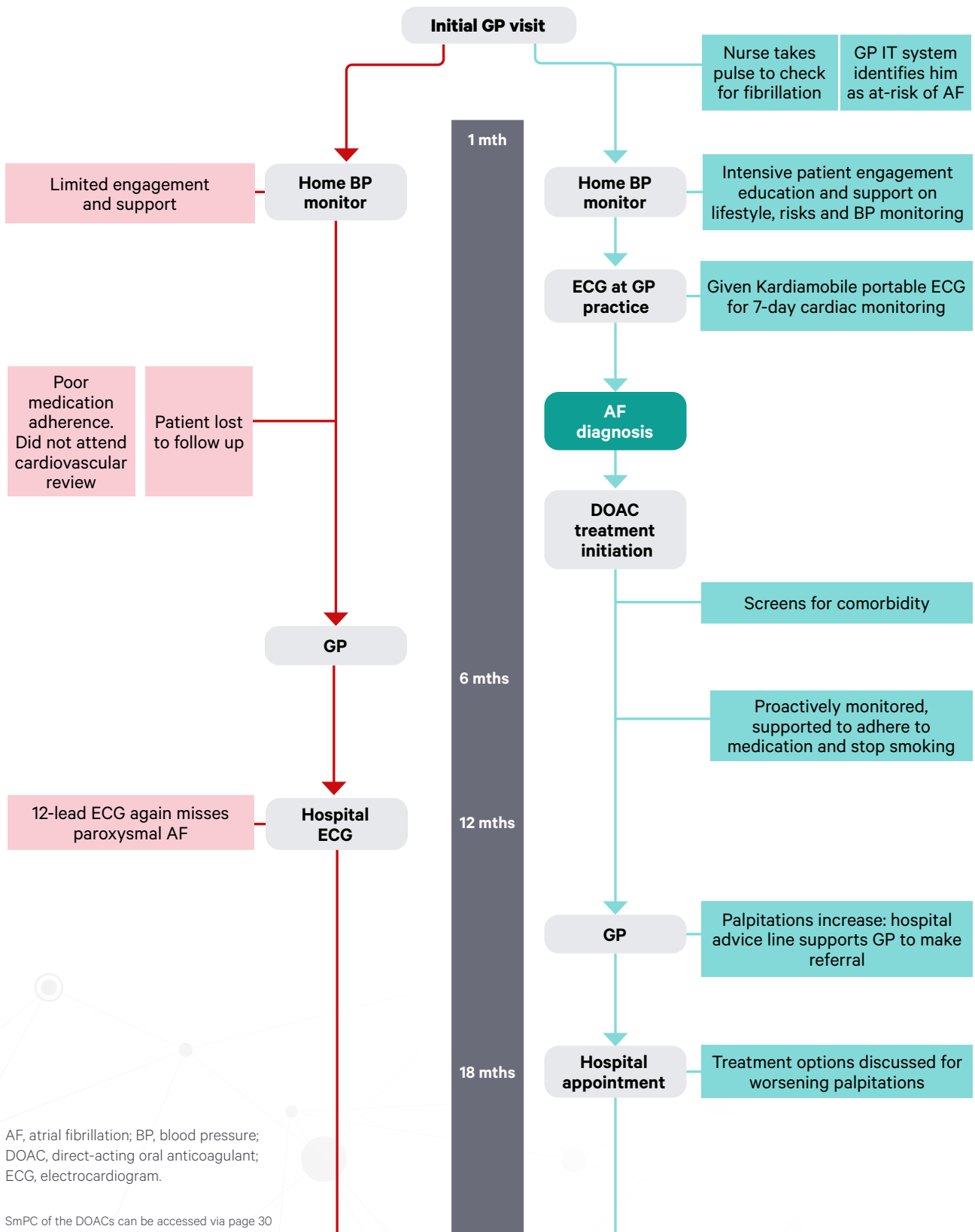
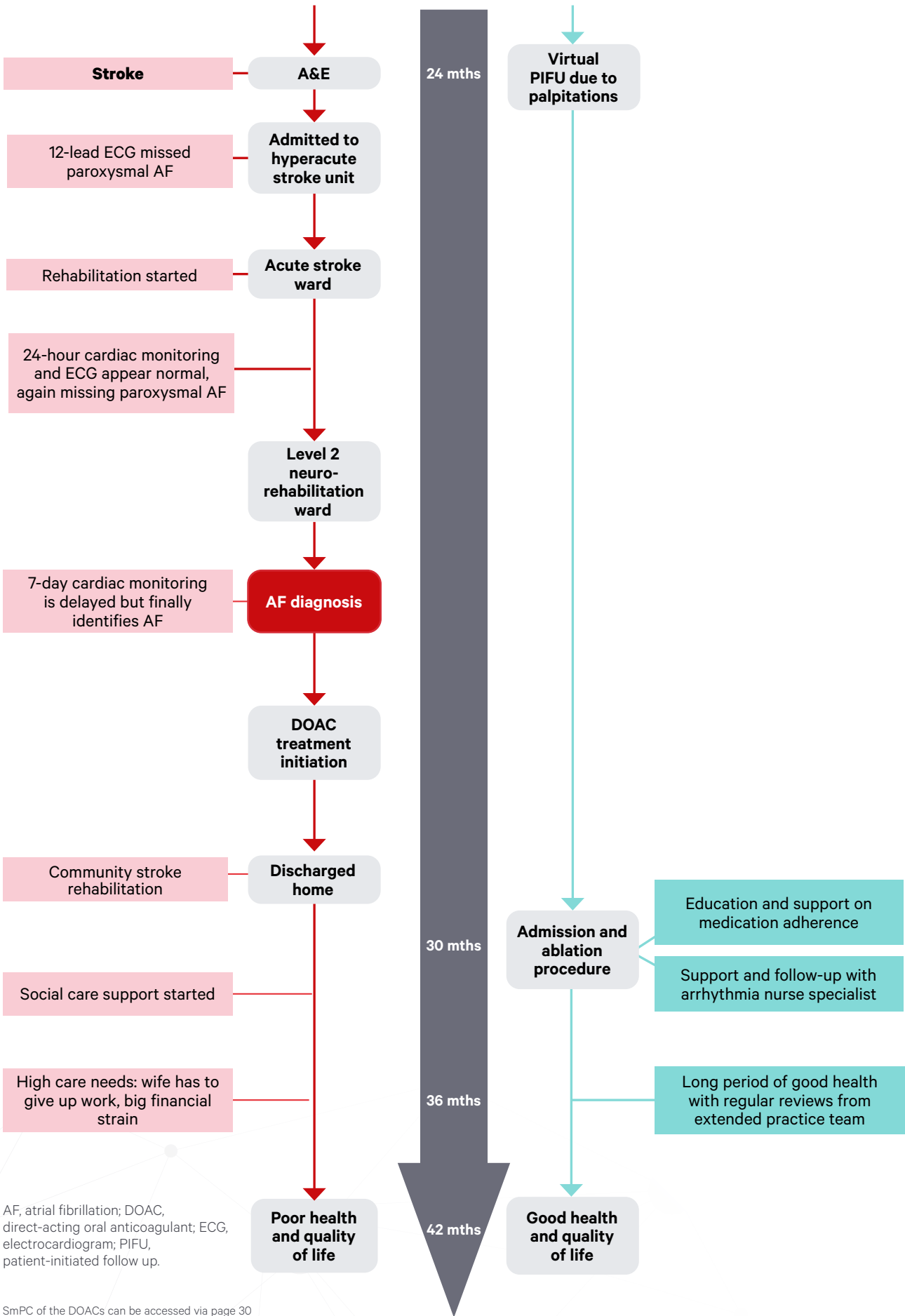


Figure 2. Overview of James's AF pathway



James's experience with AF

James is overweight and while not diabetic he is pre-diabetic (non-diabetic hyperglycaemia). He is on amlodopine for high blood pressure and atorvastatin for raised cholesterol. There is no previous history of coronary heart disease, heart failure, stroke or cardiovascular disease. He smokes and admits to drinking more alcohol than he should, mainly at weekends. In September 2018, he noticed he was getting tired more easily. He put it down to old age, but Bernice suggested he see the doctor.

ACR, urine albumin to creatinine ratio; BMI, body mass index; HbA1c, haemoglobin A1c; HDL, high-density lipoprotein; LDL, low-density lipoprotein; TC, total cholesterol; TG, triglycerides.

About James:

- BMI: 30
- Waist: 38 inches
- HbA1c: 43 mmol/mol
- Blood pressure: 137/88 mmHg
- Lipid profile: HDL=1 mmol/L, TC=4.9 mmol/L, LDL=3 mmol/L, TG=2 mmol/L
- ACR category A2: moderately increased (3 to 30 mg/mmol)
- 10-year QRisk: 28%
- Smoker: 10/day
- Alcohol: 18 units/week

Suboptimal management pathway

At his GP appointment in the suboptimal scenario, he was booked in for an NHS Health Check with the practice nurse. The nurse found his blood pressure was high so lent him a practice home blood pressure monitor to take away.

At home, he did multiple blood pressure readings: two each morning and two each evening for at least three consecutive days, to give an average reading which he phoned in to the practice. Occasionally an error message came up on the blood pressure monitor, but he thought it was because he hadn't used it correctly so he repeated it later. The GP phoned James to explain that his blood pressure had gone up again

Pulse checks and risk assessment

AF detection is not embedded in the practice's NHS Health Check clinics. An AF stroke risk evaluation (CHA₂DS₂-VASc¹⁴) and an ORBIT¹⁵ bleeding risk score could be part of a population health management approach at the practice. The practice nurse used an automatic blood pressure machine and did not check James's heart rate and rhythm. A manual pulse check is the simplest, most cost effective method of identifying undetected Atrial Fibrillation and should be undertaken in all routine clinical practice, especially for those at increased risk of AF.

and so they would increase the dose of his medications, and also gave him some dietary advice around cholesterol.

James was due for a cardiovascular health review at the GP surgery; however, he ignored the letters to book an appointment, and furthermore he didn't take his medication consistently, frequently missing doses especially at weekend.

Not feeling well

Twelve months later, in September 2019, James was feeling weary and under the weather and thought he had better go back to the doctor. The GP noticed he had an irregular pulse and requested a 12-lead electrocardiogram (ECG) at the local hospital. Both his ECG report and heart rate were normal, but he continued to feel weary and had developed palpitations. However, he put that down to his age and his medication – which didn't help him feel like taking it. Not long after, he had a couple of funny turns where he couldn't find the words in a conversation. Not recognising the significance of these episode, he put it down to age and did not seek medical attention.

Emergency

In September 2020, James fell over at the supermarket. The staff rushed to help him up but he was confused, had slurred speech and a drooped face and couldn't move his left-hand side, so they called an ambulance. In A&E he was seen by the stroke team; a 12-lead ECG was carried out and again the results were normal. He had a computerised tomography (CT) scan, was found not suitable for thrombectomy and was given thrombolysis (intravenous alteplase) within 4.5 hours.

Home blood pressure monitoring

Automated blood pressure monitors often show an error message or a flashing indicator light in patients with AF. James wasn't made aware of this and so didn't alert the practice.

Health literacy & patient activation

It was not explained to James why, although he was not symptomatic, taking his medication was so important.

Stroke/TIA risk

It is likely that James was having transient ischaemic attacks (TIAs) that were being missed. He was not aware of his stroke/TIA risk and so did not report these episodes to the practice.

Paroxysmal AF and strokes

Strokes due to paroxysmal AF don't always happen during the paroxysm. They often happen after a normal rhythm has returned. AF-related strokes tend to be more severe than non AF-related strokes. James's stroke had a Charlson Comorbidity Index of 3¹⁶.

ECG assessment

Paroxysmal AF often does not show up on a 12-lead ECG as most of the time the individual is in normal rhythm. Limited access to ECG in GP practices and long waits for hospital ECG has led to GPs initiating anticoagulant medication without access to checks. GPs don't always have access to expert ECG analysis/interpretation.

James spent three days on the hyper-acute stroke unit (HASU) where he had another CT scan after which he was transferred to the acute stroke ward at his local hospital where he stayed for four weeks of rehabilitation. To address his stroke risk and rising blood pressure, the clinical team increased the atorvastatin dose and prescribed clopidogrel. He also had a Holter 24-hour ECG recording and an echocardiogram, which both appeared normal.

Atrial fibrillation diagnosed

James was stepped down to a level 2 neurorehabilitation ward for six weeks where another Holter ECG recording was done – this time a seven-day recording. When the results eventually came through in December 2020 (there was a five week wait), James's paroxysmal AF was finally identified, 27 months after he first visited the GP, and he was started on oral anticoagulation.

In November 2020, the stroke multidisciplinary team (MDT) had decided to discharge him home to the care of the community stroke team. Occupational therapy assessed what equipment he needed at home and made a referral to social services. He needed constant care and although carers were in place, Bernice gave up her job because she worried about him being alone between care calls. James's mood was very low at this stage; he was ashamed of his continence issues and upset about the burden he put on Bernice.

Poor quality of life

By March 2021, James was still struggling to walk unaided and his speech was still very slurred. He was very depressed. Bernice was struggling too; money was tight and the pressure of caring put a big strain on her. She persuaded him to see the doctor, who prescribed antidepressants and referred him to the community psychology team. By the end of the scenario in March 2022, he was still very poorly with an increasing number of comorbidities and they were both struggling to cope.

Holter ECG recording

European Society of Cardiology guidelines recommend a 72-hour Holter ECG recording. This would be more likely to have identified AF, but James only had a 24-hour recording.

Best practice: early discharge

James had an early discharge to the community stroke team which is best practice.

Optimal management pathway

James first visited the practice nurse in September 2018 for an NHS Health Check. The practice IT system had identified him as at risk of AF so even though a manual pulse check appeared normal at this appointment, in this optimal care scenario he was booked in for a cardiac review.

At the review the practice nurse found his blood pressure had increased so he was given one of the practice's home blood pressure monitors to take away. The nurse spent some time carefully explaining how to take a reading and highlighted that an error message or a flashing indicator light could indicate an irregular heartbeat and if that happened, it was important to contact them.

At that appointment the nurse also took James's pulse and did an ECG, which were both normal. She explained to James what AF is, his potential risk of AF and that he needed to check his pulse regularly. They also discussed the related stroke/TIA risk and the FAST¹⁷ tool for suspected stroke.

The nurse did tests relating to lifestyle, including full lipid, ACR, HbA1c, blood pressure and pulse check, and explained why these tests are important for picking up warning signs of cardiovascular disease. She referred him to smoking cessation sessions and social prescribing, and discussed diet and exercise to manage his weight. The social prescriber arranged a gym membership and discussed the value and purpose of lifestyle changes¹⁸.

At home he reported his blood pressure, which had improved a little, via an app, and the GP adjusted his prescription accordingly.

IT systems & population health management IT systems & population health management

A tool on the practice electronic patient records identified a note on family history coupled with high blood pressure and smoking. AF detection is also embedded in the practice's Health Checks and other clinics.

The Face Arm Speech Test (FAST)

FAST is a validated tool for rapid stroke assessment. Suspect stroke if one or more of the following are present: new facial weakness (asymmetry such as the mouth or eye drooping), arm or leg weakness, or speech disturbance (such as slurring or difficulty in finding names for commonplace objects).

Patient education & activation

The education and engagement James received helped him understand the risk and impact of AF and stroke, the importance of adopting lifestyle changes and coming in for regular reviews – and later the importance of taking his medication correctly.

Home blood pressure monitoring

When James expressed an interest in buying his own home monitor, the practice nurse directed him to the British and Irish Hypertension Society's guide to monitors¹⁹ and to the British Heart Foundation resources on home monitoring²⁰.

Alarm bells ring

In November 2018, he noticed the irregular rhythm indicator light flashing on the monitor. Remembering the nurse had mentioned the risk of rhythm problems and AF, he called the practice. They booked him in for a check with the healthcare assistant who found his blood pressure had improved but his pulse was irregular, so immediately did an ECG at the practice and referred him to the GP. The ECG showed some atrial ectopics but not AF or paroxysmal AF. The GP gave him a mobile cardiac monitor¹ and asked him to monitor his heart for a week.

Atrial fibrillation diagnosed

The monitor highlighted paroxysmal AF so the GP referred him for an echocardiogram, to investigate possible causes and aid risk stratification. With a CHA₂DS₂-VASc risk score over 1 the GP prescribed a direct-acting oral anticoagulant (DOAC) and pulled together a care plan. His diagnosis in the optimal care scenario when he was put on the right medication came three months after he first visited the GP, which is two years earlier than his diagnosis in the suboptimal scenario.

The echocardiogram results showed that both atrial heart chambers were enlarged, secondary to diastolic disease, probably caused by hypertension. In a follow-up phone call the GP explained that no further investigation was needed, but stressed the importance of keeping his blood pressure under control.

In June 2019, the GP referred him to the practice pharmacist to review his medication. His blood results were acceptable, which helped him to realise how important his medication was to keeping him well. The pharmacist brought up the subject of healthy lifestyle, and James explained how with the support of the smoking cessation clinic and Bernice's encouragement, he had cut down and eventually given up smoking altogether. The pharmacist asked him to keep a log of his blood pressure, alcohol consumption and exercise so that he could keep track.

¹ AliveCore Kardia (NICE) / Zenecore (Stopstroke evidence base).

SmPC of the DOACs can be accessed via page 30

ECG interpretation

The GP practice has its own ECG which meant that James's could be assessed very quickly. The practice also benefited from access to remote ECG interpretation which enabled the health assistant to quickly identify James's atrial ectopic heartbeats. Furthermore, for continued monitoring there was access to a mobile cardiac monitor (ECG) for atrial fibrillation identification.

GP with an extended role (GPwER)

James's GP contacted a cardiology GPwER for advice. The GPwER underlined the importance of promptly starting on DOAC and a care plan.

ECG guidance

Note even though NG196⁴ says do not routinely perform transthoracic echocardiography (TTE) solely for the purpose of further stroke risk stratification in people with AF for whom the need to start anticoagulation therapy has already been agreed on appropriate clinical criteria. There is a reason to investigate patient for comorbidity and cause.

In a follow-up appointment in December 2019, the pharmacist checked on his progress. While he was sticking to his medication, both his blood pressure and weight were creeping up, so the pharmacist added a beta blocker in addition to his current medication and referred him to an online weight support group. He was also sent for an HbA1c test which indicated that he was borderline diabetic.

Feeling unwell

Not long after, he noticed he was becoming more tired. This made him anxious because the practice nurse had asked him to report any changes and he sent a message to the practice on the NHS app. The practice arranged for James to have his blood taken for an NT-proBNP to check for heart failure. When this came back within normal range the GP contacted the local hospital's advice and guidance line and consequently referred for him for investigation by an electrophysiologist and arrhythmia nurse. Before the appointment in the new year, he was fitted with a single-use patch Holter ECG monitor for seven days²¹. The results confirmed that the paroxysmal AF was more frequent and symptomatic with some rate control issues.

In May 2020, the consultant discussed how they could manage the AF rhythm issues and decided to change to a different beta blocker. However, he started to feel dizzy and suffer from headaches so at his next medicines review in September 2020 the practice pharmacist recommended he speak to the consultant. James called the cardiology team to book a patient-initiated follow up (PIFU) appointment. In clinic he explained to the consultant he still wasn't feeling well and was experiencing palpitations. The consultant decided to stop the beta blocker and discussed the possibility of an ablation procedure to help manage the AF rhythm issues, although he would need to take DOAC medication regardless.

Patient-initiated follow up (PIFU)

James was made aware that if he had any concerns he could contact the cardiology team, for direct access to the unit, rather than set up unnecessary recurring appointments.

Ablation procedure and good health

In March 2021, James was admitted as a day case for an ablation procedure.

James was given an AliveCor Kardia monitor from his arrhythmia nurse specialist team and recorded the results. In his follow-up appointment with the arrhythmia nurse a few weeks later, the ablation appeared to have been successful. The nurse pointed out that it was still very important he continued on the DOAC medication. He saw the nurse again in September 2021 to check his progress and had a review in December 2021 with the practice pharmacist, who again stressed the importance of taking his medication.

By March 2022, when the scenario ends, James was in good health and feeling positive. He enlisted in the expert patient programme via Arrhythmia Alliance to help support other people with AF and was excited to be off to see a Crystal Palace match with his granddaughter.

In James's optional pathway, his AF was identified sooner which enabled his condition to be managed and stroke to be prevented. This afforded him extra time of good health as an engaged and active person.

Ablation procedure

An ablation procedure is aimed at causing some scarring on the inside of the heart to help break up the electrical signals that cause irregular heartbeats. This is successful in 2 in 3 patients.

Costs and workforce implications

For the financial evaluation a detailed analysis was performed by mapping the activities involved in the suboptimal versus optimal management pathways for the fictional patient, James, highlighting the cost differences (see Figure 3). It is intended to help service transformation teams understand the implications of different treatment options for patients with AF both from a quality of life and a financial cost perspective.

Through this process it is possible to identify the cost drivers that would be incurred in primary and hospital care, using where appropriate, the NHS National Tariff Payment System²² and Unit Costs of Health and Social Care²³:

- Unit costs of health and social care, including community-based social care and hospital-based health care staff.
- Staff costs.
- Drug costs.

This does not include the cost outside the health remit or the social, emotional, physical and financial costs to the patient and family members.

Note: The financial costs are indicative and calculated on a cost-per-patient basis. Local decisions to transform care pathways would need to take a population view of costs and improvement.

The most marked outcome is the impact of the suboptimal care pathway on James and his family. In the optimal pathway, small changes in his diagnosis and management lead to the difference between:

- Being bed bound versus being active and healthy.
- Needing a family carer versus being engaged and supporting family.
- Social isolation and depression versus an active and good quality of life.

The wider system impact of missing James's AF diagnosis and consequent lack of stroke prevention management is considerable, with a system-wide health cost saving of £39,923. This suboptimal patient journey is associated with major workforce implications, as shown in Figure 4:

- A system 70-day hospital stay.
- 219 hours of the community stroke rehabilitation team.
- 97 hours of the district nursing team.
- And 555 hours of social care support.

This was for 42 months of care and does not take account of:

- Future comorbidity.
- Bernice's mental health and comorbidity.
- Potential loss of income, where James's daughter may also support and manage his care.

Figure 3. Summary of NHS costs over both 42-month scenarios*

	Suboptimal	Optimal
Acute	£13,002	£4,817
Acute stroke ward	£10,745	£0
Arrhythmia nurse	£0	£81
Cardiac investigation outpatient	£0	£258
Cardiology service MDT	£0	£238
ECG cardiology service	£163	£0
ED stroke team	£266	£0
HASU Acute Stroke Unit	£1,828	£0
Nurse / AHP review – practice based	£0	£25
Ablation procedure	£0	£4,215
Ambulance Service	£265	£0
Ambulance called out	£265	£0
Community teams	£19,109	£652
Care co-ordinator	£1,656	£0
Clinical psychologist	£1,327	£0
Community Stroke Rehab Team	£2,538	£0
Community Stroke Rehab Team 2	£7,786	£0
Discounted gym membership in the community	£0	£100
District nurse	£5,708	£0
Occupational therapists plan	£94	£0
Smoking cessation clinic – nurse led	£0	£552
Diagnostic centre	£0	£129
Cardiac investigation outpatient	£0	£129
Primary care	£1,333	£3,056
Amlodipine 10mg	£75	£75
Antidepressants Prescription Citalopram	£24	£0
Atenolol	£0	£8
Atorvastatin 10mg	£0	£2
Atorvastatin 40mg	£85	£85
Bisoprolol	£0	£46
Candesartan	£40	£88
Clopidogrel	£7	£0
DOAC	£897	£2,299
FIT blood test	£0	£10
Flu jab	£5	£5
Health Check	£6	£6
Healthcare assistant	£0	£8
Medical review – GP practice	£157	£314
Nurse / AHP review – practice based	£15	£29
Practice letters	£0	£0
Practice pharmacist	£17	£67
Sotalol	£0	£15
Social services	£14,868	£0
Bath, lift and rails installation	£1,000	£0
Carer support	£13,868	£0
Total	£48,577	£8,654

Figure 4. Workforce implications over both 42-month scenarios

Activity	Average pathway	Optimal pathway
Length of hospital stay (days)	70	0
Number of outpatient/day case visits (days)	2	5
Stroke support community team (hours)	219	0
District nursing team (hours)	97	0
Primary care appointments	4	8
Social care team hours – episodes of care (hours)	555	0

* costs are based on published costs at the time of report writing (June 2022), and are subject to price changes.

SmPC of the DOACs can be accessed via page 30

Financial calculation notes

- As noted above, the financial calculation presented here represents an indicative level of efficiency potential of the case only. Firstly, as the case is an example pathway, differential pathways for other patients may increase or reduce the potential benefit. Secondly, the potential releasing of resource associated with implementing the optimal pathway across a larger cohort of patients will be subject to over-arching contractual arrangements, which may differ across the country. For example, some of the financial benefits identified in the case, may not be fully realisable where the elements of the pathway are subject to block contracts or risk/gain shares in place between contracting parties. Equally, the release of resource may only be realised should there be a critical mass from within the targeted patient population.
- It should also be noted that the financial calculation is considered from a service transformation perspective. The impact on income and costs (including capacity management) for provider organisations will require consideration in the implementation of the optimal pathway.
- Each healthcare organisation and system will need to assess the potential for realising the financial benefits identified in the case.

The Academic Health Science Network (AHSN) selected AF²⁴ as a national programme between April 2018 and March 2020, with all AHSNs delivering the programme in their region. In the toolkit²⁵ they developed they described best practice for AF as:

- **Detect**
Raising public awareness of AF and the importance of pulse rhythm testing to identify those with undiagnosed AF.
- **Protect**
Supporting healthcare professionals to offer optimal anticoagulation medication to all those who would benefit.
- **Perfect**
Supporting patients with their anticoagulation medication and supporting clinicians to review patients with AF.

For clinicians

- **Ensure all patients with AF are appropriately coded²⁶.**
- **Make every contact count:** opportunistic/routine manual pulse checks.
- **Improve awareness:** encourage manual pulse checks to be included in routine clinical assessments.
- **Use technology:** utilise digital detection devices in clinical practice, including new single-lead mobile ECG.
- **Risk stratify:** identify and prioritise patients at high risk for primary care review.
- **Integrate records:** to assist with patient segmentation and shared monitoring.
- **Virtual clinics:** help to enable review of patients at risk. Utilise clinical decision-making tools, such as the NICE decision aid²⁷.
- **Implement prevention measures:** initiate anticoagulant medication promptly to manage stroke risk and carry out regular review to ensure medicines optimisation.
- **Optimise co-morbidities** associated with AF including hypertension, heart failure, respiratory disease, chronic kidney disease and obesity.

For service providers and system leaders

- **Make AF prevention a system ambition:** Work with partners, citizens and communities to develop and implement a whole-system strategy that promotes uptake of healthy behaviours and improves detection and management of risk factors such as AF, hypertension, high cholesterol, chronic kidney disease (particularly if albuminuric) and type 2 diabetes. Identify an individual to lead on this work on behalf of the system, working with all organisations, including public health teams and primary care leaders.
- **Cross-sector working:** Set up a cross-sector board for CVD prevention at integrated care system (ICS) level, involving partners from different organisations and sectors to develop explicit locally relevant shared goals and encourage ICS-level commitment to achieve the ambitions for CVD set out in the NHS Long Term Plan⁸.
- **Intelligence and evaluation:** Use GP practice- and primary care network-level data to identify local issues. Use national data, e.g. PHE Fingertips and CVD Prevent, to identify variation and best practice.
- **Link with other strategies:** Ensure the CVD prevention plan is clearly linked back to the system's Health and Wellbeing Strategy and Integrated Stroke Delivery Network (ISDN) stroke prevention strategies. Act on the eight urgent actions in the NHS England Phase 3 letter.
- **Healthy behaviours:** Work with local government partners on plans to address lifestyle issues such as stopping smoking, improving diet and increasing activity levels.
- **CV risk factors:** Encourage the restart of NHS Health Checks and other structured reviews to detect CV risk factors, prioritising invitations to those most at risk and tailoring invitations to increase uptake.
- **Inequalities:** Address barriers to CVD prevention for all communities by working with public sector and voluntary organisations and directly engaging communities and community leaders, including those in difficult-to-reach and vulnerable groups, in the planning and delivery of services.
- **Governance and reporting:** Agree a clear governance and reporting structure, with regular review of metrics and key performance indicators meaningful to healthcare professionals, organisations and citizens. Use health equity audits to identify whether a strategy is meeting inequality goals.

- **Shared learning:** Encourage sharing of good practice and ideas to spread innovation and reduce variation. Consider how the system can learn from events such as potentially preventable strokes or missed opportunities to intervene.

For service transformation

- Engage the whole system, including primary care, in a programme to develop pulse checks for at-risk patients at every opportunity.
- Build integrated pathways and services with MDT involving local primary care where appropriate:
 - Ensure advice and guidance services are in place.
 - Review provision of single lead ECG such as Kardia monitors.
 - Review provision of community cardiac echocardiogram facilities.
 - Build patient activation measures into systems of care to increase health ownership and improve health-related behaviours, resulting in better outcomes, better experiences of care and fewer episodes of unplanned and emergency care, leading to financial benefits for the healthcare system.
 - Enabling choice and embedding Shared Decision Making, so that people are informed and supported as equal partners in decisions about their care and treatment.
 - Systematic referral to sources of non-clinical support through social prescribing and community connecting roles, aligned with wider approaches to community capacity building and stronger partnerships with the voluntary sector.
 - Personalised care and support planning as a proactive process, bringing together people's physical, mental health and wellbeing needs into a single conversation focused on what is important to them and coordinating better access to personalised care and treatment, alongside psychosocial and community-based support.
 - Supported self-care tailored to people's level of knowledge, skills and confidence, including health coaching, self-management education and systematic access to peer support options; measured through tools such as the Patient Activation Measure (PAM®)¹⁸.
 - Personal health budgets and integrated personal budgets, enable people who could benefit to take direct control of resources available for their health and care; providing an essential counterbalance to a 'one-size-fits-all' approach, with a greater choice of care and support options.

This analysis demonstrates the differences in two potential pathways of care that a patient with AF can receive, and the impact this can have on both patient and carer outcomes and health and social care system costs. Whilst it is compiled with the input of a consensus group, it does not depict the journey of every patient, as elements of care in every patient journey will vary.

This scenario is based on the clinical expert group deciding that there are opportunities of better care that would result in saving across the healthcare system and these improvements would result in a direct saving of £39,923*, compared to a suboptimal care pathway. Delivering better, more cost-effective care for patients relies on speedy and accurate diagnosis of their AF. This is vital in unlocking stroke prevention. Clinicians must ensure that every contact counts where it comes to embedding manual pulse checks into routine care.

Accurately coded data across the system can also be harnessed to identify those patients at high risk of AF so that they can be targeted with proactive monitoring that will enable early intervention as soon as AF is detected. New technologies are available to help enhance AF detection in clinical practice, and it is important that these are more readily available to help support healthcare professionals – especially rapid access to single-lead mobile ECG. By ensuring that patients' AF is managed and that they are optimised with the appropriate anticoagulant medication at the earliest opportunity, devastating strokes can be averted which wreak havoc in patients' lives and incur enormous yet often avoidable burdens on services.

* These savings are based on the costings published at the time of report writing June 2022.

Abbreviations

AF	Atrial fibrillation
AHSN	Academic Health Science Network
CT	Computerised tomography
CVD	Cardiovascular disease
DOAC	Direct-acting oral anticoagulant
ECG	Electrocardiogram
EMC	Electronic medicines compendium
GPwER	GP with an extended role
HASU	Hyper-acute stroke unit
ICS	Integrated Care System
ISDN	Integrated Stroke Delivery Network
MDT	Multidisciplinary team
NT-proBNP	N-terminal pro-brain natriuretic peptide
PIFU	Patient-initiated follow up
POM	Prescription-only medicine
SmPC	Summary of product characteristics
TIA	Transient ischaemic attack
TTE	Transthoracic echocardiography

SmPC of the DOACs can be accessed via page 30

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The term direct-acting oral anticoagulants (DOAC) refers to a number of medicines. Summary of product characteristics (SmPC) for each can be accessed:

Lixiana (edoxaban) 60mg Film-Coated Tablets - SmPC - (emc)
(medicines.org.uk/emc/product/6905/smpc)

Xarelto (rivaroxaban) 20mg film-coated tablets - SmPC - (emc)
(medicines.org.uk/emc/product/2793/smpc)

Pradaxa (dabigatran) 150 mg hard capsules - SmPC - (emc)
(medicines.org.uk/emc/product/4703/smpc)

Eliquis (apixaban) 5 mg film-coated tablets - SmPC - (emc)
(medicines.org.uk/emc/product/2878/smpc)

LEGAL CATEGORY: POM

NHS Indicative Price: Carton of 10 film-coated tablets 2.5mg £9.50, 20 film-coated tablets 2.5mg £19.00, 60 film-coated tablets 2.5mg £57.00, 56 film-coated tablets 5mg £53.20, 28 film-coated tablets 5mg £26.60.

Source: <https://bnf.nice.org.uk/drugs/apixaban/medicinal-forms/>

Eliquis is a promoted product of the BMS/Pfizer Alliance.

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