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The Stroke Prevention in Atrial Fibrillation Expert Report

A UK report for media and parliamentarians
June 2012

This report was authored by an independent panel of experts in Atrial Fibrillation. Boehringer-Ingelheim was consulted on the recruitment of the panel, outline development and medico-legal approval of this report and provided the financial support for the project overall. The views expressed in this publication are those of the expert panel. Full editorial control of the report rested with them.

Boehringer Ingelheim

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The Stroke Prevention in Atrial Fibrillation Expert Report

Foreword

This report has been developed to highlight issues in the management of patients with the common heart rhythm disorder, atrial fibrillation (AF), who are at a five-fold increased risk of suffering a stroke, compared to a patient without AF.[1] The management of AF is a complex issue, and this report focuses specifically on stroke prevention in people with AF.

Stroke is a major public health problem and the largest cause of adult disability in the UK[2], costing the NHS an estimated £3 billion a year.[3]

In patients with AF, stroke mortality is twice that of non-AF related strokes.[4] Over the past decade there has been considerable improvement in the management of stroke prevention in atrial fibrillation (SPAF). However, challenges still exist such as under-diagnosis of at-risk patients, the under-prescribing of anticoagulants and, importantly, a lack of public awareness about the condition.

This report and 'Call to Action' is a summary of a meeting which brought together individuals with varied, complimentary expertise and experience, spanning primary, secondary and tertiary care and key voices: patients, charities and working groups. The meeting took place on Monday, 30 April 2012, at High Holborn, London.

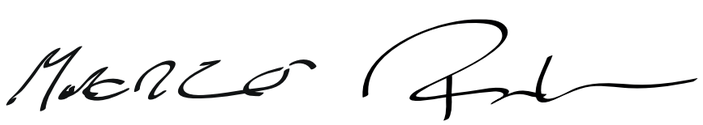
It is intended that this report will help improve understanding of the issues and challenges involved in the current management of stroke risk in patients with AF, and will lead to improvements in patient treatment, outcomes, and experience.

Signed by:

Expert Panel members

Clinical experts

Dr. Alan Begg, *GP with special interest in Cardiology, Montrose*



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Rachel Seyler, Stroke prevention officer, *Stroke Association*

Glyn Davies MP, *Chair of AF All Party Parliamentary Group*

Eve Knight, Chief Executive and co-founder, *Anticoagulation Europe*

Executive Summary

AF is a chronic condition which affects around one million people in the UK.[5] As noted in the latest NICE guidance, compared to non-AF patients, people with AF are at a five-fold increased risk of suffering a stroke;[1] it is estimated that 15% of all strokes are directly attributable to AF.[6] The physical cost of AF to patients can be devastating; strokes caused by AF are in general more severe and are associated with an increased likelihood of death (20%) and disability (60%) compared to non-AF stroke.[7] Strokes related to AF are also more likely to re-occur.[7] AF also increases the risk of medical complications such as pneumonia and bleeding in the brain after stroke.[8]

This report, developed by an independent expert panel, encompassing a broad range of expertise and experience, highlights the current issues and challenges in SPAF.

Key conclusions of the report include:

- AF is a highly prevalent condition with cases expected to double within the next 50 years[9]
- There are many thousands of undiagnosed patients with AF across the UK
- There is low awareness of AF and its associated health risks amongst the general public and many health care professionals (HCPs)
- There is regional variation in the management of AF patients and the resources available, possibly due to variation in HCP education and resources
- Stroke prevention is sub-optimally implemented for patients with AF; 70-80% of patients may be eligible for anticoagulation[10], but many patients are not receiving such therapy.[11]
- Adequate time and resources are needed to enable HCPs to fully inform the patient about their condition and preferred treatment choice.

"The outlook for patients with AF has improved over the last decade, especially with diagnosis and the introduction of new oral anticoagulants. However, there still remains regional variation in managing these patients. We have reached a critical juncture, and we need to challenge the way we diagnose, treat and manage this potentially life threatening condition to further improve the outcome for patients. The AF community need to work together to provide a better outlook for patients in the UK."

Glyn Davis
Chair, All Party Parliamentary Group for AF

AF and Stroke: The Facts

What is AF?

AF, which causes an irregular and often fast heart beat[12], is the most common sustained heart rhythm disturbance.[13] In patients with AF, the normal control of heart rhythm is disrupted, leading to rapid and irregular electrical signals, which cause the atria (upper heart chambers) to quiver rather than contract in a coordinated fashion. This paralyses the pumping action of the atria, which would ordinarily propel blood from the atria into the ventricles (lower heart chambers). Blood then pools in the atria where a clot may form. If the clot breaks off and travels to the brain it can cause a stroke.

Risk factors for AF [4, 14, 15, 16]

There are a number of risk factors for AF, but the rhythm disorder is often associated with cardiovascular disease, including hypertension, heart failure and valvular heart disease. Advancing age, excessive alcohol and family history of AF can also contribute, as well as lung disorders such as pneumonia and cancer. AF may also be related to chronic conditions such as diabetes and sleep apnoea.

Symptoms of AF[12]

Symptoms of AF include: palpitation, fatigue, weakness, dizziness, fainting, shortness of breath and chest pain, although, unfortunately many patients may not experience any symptoms prior to their first presentation with stroke. Quality of life is generally degraded, even in apparently asymptomatic patients.

Prevalence of AF

It is estimated that up to one million people are diagnosed with AF in the UK.[5] Nearly 50,000 cases are diagnosed each year in the UK and it is increasingly more common with increasing age.[12] About 1 in 200 people aged 50-60 have AF.[12] This rises to around 1 in 10 people aged over 80 years.[12] The prevalence of AF is anticipated to at least double by 2050.[9] A 40 year-old person has a 25% chance of developing AF during their lifetime.[17]

AF and stroke

Ischaemic stroke is caused by an interruption in the flow of blood to the brain[18] and is a major complication associated with AF. If AF causes a clot to form in the left atrium, the clot may travel through the circulation and occlude a blood vessel, blocking the supply of oxygen and nutrients to the brain.

In the UK, approximately 22,500 strokes each year are thought to be directly attributable to AF.[6,19] Up to 50% of people who have a stroke related to AF die within one year.[20] About 50% of people who survive an acute ischaemic stroke will continue to experience a substantial level of disability after six months.[21] Beyond the personal impact of death and disability, stroke also places a considerable burden on the National Health Service (NHS) and wider economy. It is estimated that stroke care costs the NHS £2.8 billion in direct care costs, and costs the wider economy an additional £1.8 billion in loss of productivity and disability.[3] Indirect care costs, such as home nursing, are estimated to be £2.4 billion.[3] Annually, stroke patients occupy up to a quarter of total hospital bed days.[4]

Key points

- AF is the most common sustained heart rhythm disturbance in the UK
- The prevalence of AF is anticipated to at least double by 2050
- Approximately 22,500 strokes each year are thought to be directly attributable to AF across the UK
- Up to 50% of people who have a stroke related to AF die within one year
- It is estimated that stroke care costs the NHS £2.8 billion in direct care costs and a further £1.8 billion to the wider economy in terms of loss of productivity and disability

"There are different AF treatments currently available and if AF is properly treated the patient's stroke risk would be reduced as a consequence"

Rachel Seyler,
Stroke Association

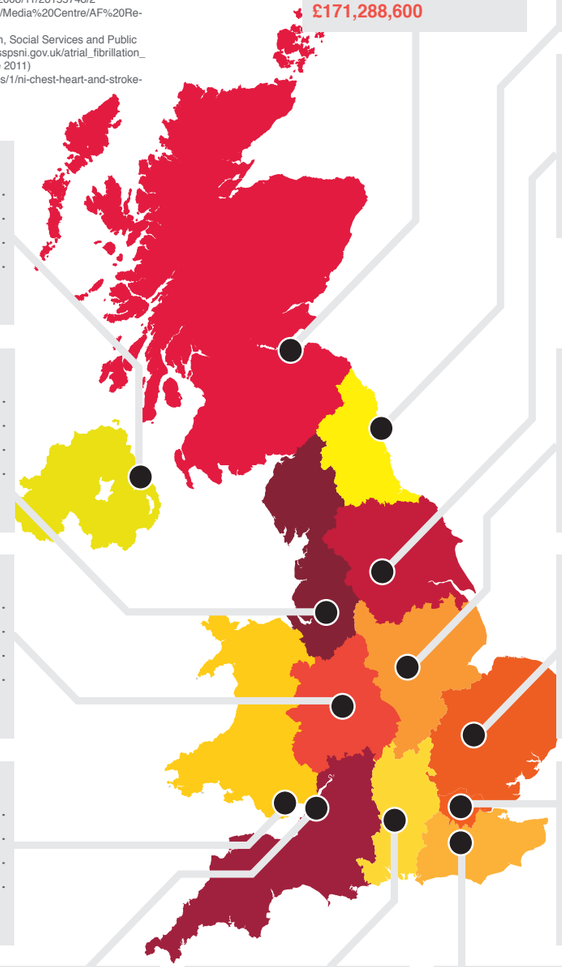
up to 1M
are diagnosed with AF in the UK[5]

£2.8B
is the estimated stroke care cost to the NHS

AF and Stroke: The UK at a Glance

This map is designed to provide a general overview of AF and stroke cases in the UK and figures are based on various estimations and assumptions.

1 Scarborough P et al. Stroke statistics 2009 British Heart Foundation Health Promotion Research Group. http://www.bhf.org.uk/research/statistics/heart-statistics-publications.aspx, accessed May 2012
2 National Institute for Health and Clinical Excellence, Guideline 36, Costing template, Atrial fibrillation: the management of atrial fibrillation, July 2006, available at http://www.nice.org.uk/usingguidance/implementationtools/costingtools.jsp, accessed June 2012
3 SHA level Qof tables 2010/11 http://www.ic.nhs.uk/statistics-and-data-collections/supporting-information/audits-and-performance/the-quality-and-outcomes-framework/qof-2010-11/qof-2010-11-data-tables/qof-prevalence-data-tables-2010-11, accessed June 2012
4 http://www.scotland.gov.uk/Publications/2008/11/26155748/2
5 http://www.atrialfibrillation.org.uk/files/file/Media%20Centre/AF%20Report%20Wales_v1_singles.pdf p12
6 QOF Data2009-10. Department of Health, Social Services and Public Safety. Available online at http://www.dhsspsni.gov.uk/atrial_fibrillation_indicators_by_lcg.pdf (accessed 15 June 2011)
7 http://www.nichs.org.uk/56/press-releases/1/ni-chest-heart-and-stroke-welcomes-fast-campaign



Scotland
Edinburgh
AF cases[4]: **60,074** (over 40s)
Stroke cases[1]: **95,959**
AF related strokes*: **14,394**
Cost of AF related strokes**:
£171,288,600

North East
Newcastle Upon Tyne
AF cases[2]: **33,394**
Stroke cases[1]: **55,828**
AF related strokes*: **8,374**
Cost of AF related strokes**:
£99,650,600

Yorkshire and the Humber
Leeds
AF cases[2]: **64,922**
Stroke cases[1]: **98,340**
AF related strokes*: **14,751**
Cost of AF related strokes**:
£175,536,900

Northern Ireland
Belfast
AF cases[6]: **24,000**
Stroke cases[7]: **3,000**
AF related strokes*: **450**
Cost of AF related strokes**:
£5,355,000

North West
Manchester
AF cases[2]: **87,397**
Stroke cases[1]: **130,803**
AF related strokes*: **19,620**
Cost of AF related strokes**:
£233,478,000

East Midlands
Nottingham
AF cases[2]: **73,708**
Stroke cases[1]: **74,563**
AF related strokes*: **11,184**
Cost of AF related strokes**:
£133,089,600

West Midlands
Birmingham
AF cases[2]: **68,094**
Stroke cases[1]: **94,644**
AF related strokes*: **14,197**
Cost of AF related strokes**:
£168,944,300

East of England
Cambridge
AF cases[3]: **91,944**
Stroke cases[1]: **89,178**
AF related strokes*: **13,377**
Cost of AF related strokes**:
£159,186,300

Wales
Cardiff
AF cases[5]: **50,138**
Stroke cases[1]: **61,448**
AF related strokes*: **9,217**
Cost of AF related strokes**:
£109,682,300

London
London
AF cases[2]: **42,272**
Stroke cases[1]: **85,508**
AF related strokes*: **12,826**
Cost of AF related strokes**:
£152,629,400

South West
Bristol
AF cases[2]: **75,019**
Stroke cases[1]: **100,348**
AF related strokes*: **15,052**
Cost of AF related strokes**:
£179,118,800

South Central
Newbury
AF cases[2]: **48,422**
Stroke cases[1]: **61,082**
AF related strokes*: **9,162**
Cost of AF related strokes**:
£109,027,800

South East Coast
Horley
AF cases[2]: **59,520**
Stroke cases[1]: **72,579**
AF related strokes*: **10,887**
Cost of AF related strokes**:
£129,555,300

* Based on the estimation that 15% of all strokes are caused by AF (Lip GYH, Lim HS. Lancet Neurology 2007;6:981-93;)

** Based on the related cost per AF associated stroke which is estimated at £11,900 in the first year alone following stroke occurrence (Anticoagulation for Atrial Fibrillation: a simple overview to support the commissioning of quality services, NHS improvement, April 2011)

AF and Stroke: The True Cost

Stroke is one of the top three causes of death and the largest cause of adult disability in England[2], costing more than £7 billion each year in direct and indirect costs.[3] Recurrence of stroke amongst AF patients is more frequent, and disability can be more severe among survivors.[7] Since stroke is too often the first sign of embolism in AF, identification and prevention is critical to reducing disability and mortality.[7] The related NHS cost for each AF-associated stroke is £11,900 in the first year after the stroke. This can increase by up to a further £8,000 a year if the stroke is disabling.[22] In the UK, AF was associated with over half a million hospital admissions in 2008.[23]

International consensus guidelines recommend that patients with AF who are at high or moderate risk of stroke should be treated with anticoagulants.[9] Unfortunately, many are inappropriately treated with antiplatelet therapy, the most common being aspirin. For years warfarin has been the standard of care for preventing stroke in moderate to high risk patients with AF. Warfarin requires regular monitoring by blood tests and patients need to be controlled within a narrow therapeutic range (the range within which most patients will experience best therapeutic effect) to ensure the warfarin is effective but without too high a risk of bleeding.

About three out of four AF patients are eligible for treatment with an anticoagulant.[10] Currently though, only half of patients diagnosed with AF and at risk of stroke actually receive warfarin,[10] the current standard of care, and just over half of these are likely to stay controlled within the narrow therapeutic range.[24] The incidence of AF continues to increase, in line with an ageing population throughout the developed world.[25] The high economic cost of treating stroke means there is a clear need to identify means of overcoming the under-utilisation of anticoagulant therapy and to improve the management of patients' to protect them from stroke.[26]

In addition to warfarin, two new oral anticoagulants have been approved by NICE, which may provide some doctors and patients with more treatment options for managing stroke risk. These new oral anticoagulants produce more predictable levels of anticoagulation and therefore do not require frequent coagulation monitoring, dose changes or have any known dietary restrictions.[26] The new agents have also been shown to provide similar or improved protection against the risk of stroke and systemic embolism (blood clot travelling elsewhere in the body, e.g. legs) compared with warfarin.[27]

Key points

- Stroke is one of the top three causes of death and the largest cause of adult disability in the UK
- International consensus guidelines recommend that patients with AF who are at high or moderate risk of stroke should be treated with anticoagulants, however many patients are not receiving these treatments
- New oral anticoagulants provide alternative options for doctors and patients to consider reducing the risk of stroke in patients diagnosed with AF.

£7B

direct/indirect annual cost of Stroke in England[3]

500,000

hospital admissions in the UK due to AF in 2008[23]

£11,900

NHS cost for each AF-associated stroke[22]

Current Issues and Challenges

Despite AF being the most common heart rhythm disturbance, it has been suggested that thousands of people in the UK are unaware that they are suffering from the condition and are at risk of stroke. With AF figures set to double[9] the UK urgently needs to address the issues and challenges facing the management of this condition.

The following sections look closely at all the contributing factors.

DIAGNOSIS

AF is a chronic condition. During AF, the rate of the ventricle may be well over 140 beats a minute[28] (normal heart rate should in general be between 60 and 100 beats per minute when resting). Patients with obvious symptoms are relatively straightforward to diagnose, provided that an electrocardiogram (ECG), a test that records the rhythm and electrical activity of the heart, can be recorded when they have their symptoms. Others are only discovered during routine health surveillance, at opportunistic screening[A] or investigations for another condition. Despite the availability of readily available checks, authoritative estimates suggest around half of AF patients remain undetected.[4] This is frequently because patients are unaware that the symptoms they experience are a sign of anything serious, often explaining their tiredness or limited exercise tolerance by "growing old". In these 'hidden' cases, a HCP can suspect diagnosis of AF by feeling the pulse of an individual. However, a complete diagnosis requires further tests.[28]

Following identification of initial signs, for example by palpation of the pulse, HCPs need to perform an ECG. An ECG is painless and takes approximately five minutes to complete. When the rhythm disturbance is unpredictable the patient may be given a device for several days which they are able to apply to the chest. This is so that an ECG can be recorded over a longer period of time when the symptoms occur.[28]

The key to accurate diagnosis is correct interpretation of the ECG results; either by a GP with ECG expertise or a specialist physician/ cardiologist. Some GPs may send the results to a local hospital via fax or mobile phone as not all GPs are experienced in interpretation of the ECG.

According to NICE guidelines, an ECG should be performed in all patients, whether symptomatic or not, in whom AF is suspected. However this does not always happen because not all GP surgeries in the UK are fully resourced with ECG machines. Therefore patients have to be referred to secondary care just to have a simple ECG performed, prolonging time to diagnosis and possibly causing more worry and stress for patients.

If GPs had sufficient time and training to complete the ECG within the surgery facilities it could prevent around half a million referrals to hospitals every year, saving the NHS thousands of pounds. The patchy access to simple investigations such as an ECG across the UK may have significant impact on the diagnosis of AF.

> *"In Leeds most of our GPs' surgeries have an ECG monitor; however this is not necessarily the case across the rest of the UK. It is so much more convenient and cost effective for patients to be tested within their own GP's surgeries ."*
>
> ***Dr. Mark Davis***

Key points

- Authoritative estimates suggest around half of AF patients remain undetected
- Patients are frequently unaware of the symptoms of AF
- Not all GP surgeries in the UK are resourced with an ECG machine to diagnose AF accurately

A Such as via the Stroke Association 'Ask First' campaign which partners with the Ambulance Trusts to regularly check for AF at their events

EDUCATION

In recent years there have been major advances in understanding the prognostic importance of AF. Useful clinical prediction scores have been developed for stroke risk in patients with AF, such as $CHADS_2$ and CHA_2DS_2VASc.[9] It is important that these latest risk scoring systems are widely disseminated among all HCPs

dealing with patients who may have AF, to avoid the under-diagnosis and under-treatment of patients.

> *"As well as the lack of facilities to diagnose AF accurately, many HCPs have been taught in the past that AF is a minor problem and not a dangerous arrhythmia"*
>
> ***Professor John Camm***

Currently AF is not part of any national screening programme, although it meets the appropriate criteria to be accepted in the UK.[30] In order to better identify AF patients and provide adequate treatment, a recent consensus conference organised by the Royal College of Physicians of Edinburgh has recommended opportunistic pulse checking of people over 65 by GPs, followed by ECG examination for those with an irregular pulse.[31]

A screening study entitled 'A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over (the SAFE study), commissioned by the Department for Health, demonstrated that opportunistic screening was the most cost-effective method for identifying AF in patients aged 65 and over within primary care.[32] Pilot studies offering pulse checks for patients attending 'flu clinics' and integrating pulse checks into chronic disease management templates have demonstrated that this is an effective and cost-effective way to ensure that many people living with undetected AF are identified.[33]

Patient experts also believe that AF symptoms can sometimes be wrongly attributed to old age. In addition, some patients with AF present with few symptoms, making it even more challenging to detect. Occasionally an irregular pulse or palpitation may turn out to be ectopics (extra beats).[34]

Case study:

An elderly woman was continually in and out of a GP surgery for a number of years with palpitations. Unfortunately, her ECGs did not capture the problem and ultimately the person felt foolish, seeming to take appointments and be rushed into hospital for no 'diagnosed reason', until recently, when she suffered a stroke. "The doctors believe me now and have diagnosed atrial fibrillation. I no longer feel a fool, but I wish it hadn't taken a stroke to find a diagnosis" (Source: Atrial Fibrillation Association)

It is clear that although there have been developments in the area of stroke prevention in AF, challenges remain. Levels of HCP education need to be improved across the UK. As the stroke prevention in AF environment evolves, it will be important for HCPs to keep up with the latest developments. It is important to recognise that in the past decade, primary care has made positive steps to manage AF. However far more could be done to help GPs recognise the warning signs of all types of AF allowing for better diagnosis.

> *"There is very little time spent on education during training of healthcare professionals about anticoagulation or perhaps even AF, because AF still really isn't seen as the priority it should be."*
>
> ***Eve Knight,***
> *Anticoagulation Europe*

Key points

- The profile of AF needs to be raised in order to improve education about the condition amongst the public and HCPs and ensure patients receive optimal therapy
- GPs should check for AF in patients attending the surgery for any reason, particularly in those over the age of 65
- Clinical prediction tools for stroke risk such as $CHADS_2$ or CHA_2DS_2VASc need to be widely used to avoid under- treatment

PATIENT PATHWAY

AF is a chronic condition, managed mostly within primary care with the appropriate guidance. It seems however that there is often uncertainty among GPs regarding the criteria for patient referrals. It is thought that if GPs were equipped with clear and concise guidelines to make more informed decisions, patients would be treated and managed optimally. The World Heart Federation has developed guidelines on handling AF in primary care, a simple reference guide to assist early diagnosis and optimal management of AF patients,[35] which could be adopted in the UK. Essentially, those patients with AF who are young, at high risk or have an underlying condition e.g. heart disease, should be referred to a specialist for advice and treatment.

> *"There appears to be a lack of a cohesive and seamless approach to the management of AF in primary and secondary care and as a consequence stroke risk is not optimally managed. There is a need for more specialist nurses who in addition to managing chest pain and heart failure can also manage arrhythmias such as AF"*
>
> ***Dr. Alan Begg***

Since 2006, AF has been included in the NHS Quality and Outcomes Framework (QOF) as an important clinical area, demonstrating that the condition is starting to rise up the health agenda.[36] QOF provides more incentive for keeping a register of AF patients (AF1), carrying out a risk assessment (AF5) and ensuring antithrombotic therapy is based on risk assessment (AF 6 and 7).[36] Recent updates to QOF recommend a $CHADS_2$ risk assessment as well as antithrombotic therapy based on the level of that risk.[36]

Key points

- There may be lack of clarity among GPs regarding the criteria for patient referrals
- In some areas there may be a need for more specialist nurses to alleviate pressure on GPs

GUIDELINES

There are existing guidelines and tools to help GPs manage AF optimally. In 2006 NICE published a clinical guideline on managing AF.[37] The field of stroke thromboprophylaxis is developing quickly, so these guidelines are now outdated. The guideline is currently being updated and will most likely be published in 2013 or 2014. Supporting the distribution of knowledge on prevention and treatment of AF amongst HCP's is also a primary role of the European Society of Cardiology (ESC). The current ESC guidelines were developed and published in the European Heart Journal and Europace in 2010, and are the most up to date international European guidance at present.[9] ESC guidelines are also being updated to incorporate new developments, especially in the field of anticoagulation.

Another popular tool is GRASP-AF which was initially developed by the West Yorkshire Cardiovascular Network, the Leeds Arrhythmia team and PRIMIS+ (Primary Care Information Services), as part of the NHS Improvement Stroke Prevention in Primary Care: Managing Atrial Fibrillation projects.[11] NHS Improvement is promoting the use of this tool, as part of a systematic approach to the identification and optimal management of patients with AF to reduce their risk of stroke. This tool identifies patients coded with AF on the GP practice computer, calculates their stroke risk and details their current management. So far, it has been taken up by around 1,800 GP practices across England.[11] GRASP-AF is only available in England and Wales and not in Northern Ireland or Scotland. This highlights the regional disparity in assessing the management of patients with AF.

> *"It is important that all doctors refer to latest guidelines when managing patients with AF. Doctors in Northern Ireland have been really impressed with the GRASP-AF results from Leeds and are very keen to implement it locally if it can be resourced."*
>
> ***Dr Ian Menown***

Key points

- There is a need to facilitate early output of updated AF guidelines based on new evidence
- Tools such as GRASP-AF need to be used routinely throughout the UK to address the regional disparity in AF management

PATIENTS

Stroke and AF charities stress that people find AF a complex issue, so use of simple language is crucial, whether in information leaflets or on websites.[37] On diagnosis, the priority for HCPs should be to assess the need for anticoagulation, and to introduce this type of therapy if needed. For this reason, patients should be informed of the link between AF and stroke at first diagnosis.

"Many people don't know what AF is and many more fail to recognise it as a major risk factor for stroke. AF is a complex condition and if you're diagnosed with it, it can be an incredibly daunting and scary time. We need to make sure that every patient receives the appropriate information to support them in coming to terms with living with AF. Every patient should be made aware of their stroke risk and should know what they need to do to reduce it."

Rachel Seyler,
Stroke Association

Patients who are diagnosed with AF tend to be within the older population,[4] who do not readily access information 'online'. Public awareness of AF needs to increase to allow patients of all ages to be well informed about their condition.

'In waiting rooms there often seems an abundance of information on 'common' conditions, and even well recognised appointed healthcare specialists. Atrial fibrillation? Despite it being extremely common, potentially life threatening and so often life changing, many patients have no access to reliable information or to an AF primary care clinician who can help them understand AF and the therapies required.'

Jo Jerome,
Atrial Fibrillation Association

Key points

- There needs to be greater public awareness of AF as a condition
- The use of simple language when communicating about AF and stroke is crucial

STROKE RISK

The priority for HCPs is to manage a patient's AF adequately to prevent a stroke. Strokes related to AF tend to be larger and associated with poorer prognosis[7]: mortality following AF related stroke is nearly 50% at 1 year.[20] Approximately 50% of people who survive an acute ischaemic stroke related to AF will experience a substantial level of disability after six months.[21]

Clinicians assess a patient's stroke risk by using a scoring scheme such as the $CHADS_2$ or CHA_2DS_2VASc.[9] These are used to determine whether or not treatment is required with anticoagulation therapy or antiplatelet therapy. A high score corresponds to a greater risk of stroke, while a low score corresponds to a lower risk of stroke. Patients with AF who are at high or moderate risk of stroke should be treated with an anticoagulant, whereas low risk patients were previously given aspirin but are now advised to take nothing.[9]

"Assessing patient risk using a formal risk score such as CHA_2DS_2VASc is very important. By identifying patients at risk of stroke and commencing anticoagulation where appropriate we will significantly improve patient outcomes and reduce the burden of stroke care on the NHS."

Dr Ian Menown

Key points

- Strokes related to AF tend to be larger and associated with poorer prognosis
- In order to identify patients eligible for anticoagulation therapy a formal risk score such as CHA_2DS_2VASc need to be used regularly
- Low risk patients were previously given aspirin, but are now advised to take nothing

ANTICOAGULATION

Direct treatment of AF is frequently necessary to control symptoms and reduce stroke risk.[4] Warfarin has been the recommended 'first-line' treatment for Stroke Prevention in Atrial Fibrillation in the UK for many years and is an effective and inexpensive treatment. Warfarin has been shown to provide at risk AF patients with a 62 percent relative reduction in stroke risk (absolute risk reduction [ARR] 3.1%) and a 26 percent reduction in death (ARR 1.6%).[4,38,39] This means that for every 1,000 patients treated with warfarin, 31 strokes and 16 deaths will be prevented each year.[4] Warfarin and other vitamin-K antagonists (a class of anticoagulant which alter the blood clotting by inhibiting the action of vitamin K) are highly effective when the blood clotting value is maintained within the therapeutic range. Below this range, the risk of stroke is not reduced, and above this range the risk of bleeding increases.[4]

People taking warfarin are required to attend regular blood tests (or some patients conduct tests themselves at home) to ensure they are controlled within the correct therapeutic range. Many patients are able to stay within range, though a significant number of others struggle to remain within range, thus putting them at risk of stroke. A number of common foods, drinks and medicines can interact with warfarin, sometimes causing serious problems and reducing the effectiveness of the treatment considerably.[4] The practical difficulties in maintaining the target INR raises concerns that the efficacy and safety observed with warfarin in clinical trials might not reflect what can be achieved in clinical practice.[4]

"Many patients have an apprehension about being treated with warfarin and incorrectly believe aspirin to be safe and as effective. There is a need for better patient awareness of AF and stroke prevention to ensure that this myth is dispelled"

Jo Jerrome

Despite the proven efficacy of warfarin in terms of stroke prevention, warfarin is used less than recommended in clinical guidelines.[4] Recent GRASP-AF data suggests that nationally there are many thousands of patients with a history of AF and known risk factors at high risk of stroke, who are currently not treated with an oral anticoagulant.[40] For example, in Leeds, there are approximately 2,119 patients diagnosed with AF (1.4% of combined GP practice population). Of this population, 46% of diagnosed AF patients have a $CHADS_2$ score greater than 2, but are not receiving warfarin.[41] If such patients without contra-indications were managed with an oral anticoagulant, 4,800 strokes could potentially be prevented nationally each year.[40]

Data from the Stroke Association obtained in 2011 also reveals that over half of GPs were finding problems around prescribing anticoagulants: 76 percent of GPs know that stroke relates to AF, but only 40 percent would initiate a prescription for warfarin, while others would prescribe alternative treatments such as a beta blocker (17%). [42]

"There is a failing to identify patients with AF who are at moderate to high risk of stroke. The absolute benefit of anticoagulation increases with age and increasing stroke risk."

Dr Paul Kalra

The development of novel oral anticoagulants, such as dabigatran etexilate and rivaroxaban, increases treatment options for the management of stroke prevention in AF. Novel oral anticoagulants have been shown, when compared with dose-adjusted warfarin, to further reduce the relative risk of stroke and systemic embolism in AF patients.[28] NICE has determined that these novel anticoagulants are cost-effective treatment options,[43,44,45] whilst providing patients and HCPs with increased treatment options. Unlike people taking warfarin, patients on these new drugs are not required to regularly attend clinics to monitor their anticoagulation levels. There are no known food interactions and fewer drug-drug interactions.[27]

"The new anticoagulants are going to be very important for eligible AF patients because it could help reduce the number of strokes even more than the current standard treatment. They provide an option that is easy to take with no need for monitoring for thousands of patients who are either unstable on warfarin or currently receive no treatment at all."

Professor John Camm

Despite NICE guidance, many diagnosed and potentially appropriate patients (for example patients unstable on warfarin) are not receiving these

drugs. This is due to a variety of reasons including: insufficient time to pass through local formulary committees and lack of local guidelines identifying appropriate patients.

Within the current economic climate, the relative cost of new drugs may also present a barrier to better stroke prevention and patient access to novel oral anticoagulants. There is considerable variation in policy between primary care trusts (PCTs); some are using these new drugs regularly and have drawn up a criteria for new treatments (such as for patients which have experienced a life-threatening bleed or thrombosis in the last 6 months on warfarin), whilst others have banned them outright until local solutions can be found.

"Many patients and doctors will welcome the new oral anticoagulants that have been approved by NICE. We have waited for more than 50 years for an alternative to warfarin, and I am delighted that at last we have another option to offer to patients who might benefit."

Professor Martin Cowie

Key points

- GRASP-AF has demonstrated that warfarin prescribing varies considerably throughout England and Wales
- Despite the proven efficacy of warfarin in terms of stroke prevention, warfarin is used less than recommended in clinical guidelines
- New oral anticoagulant medicines present doctors and eligible AF patients with increased treatment options.

ANTIPLATELET THERAPY

NICE estimates that between 70 and 80 per cent of patients with AF are eligible for treatment with an anticoagulant,[10] yet this is not reflected in real-life clinical practice. This is partly due to GPs preferring an antiplatelet therapy as an alternative, the most widely used being aspirin. Data from 2006 suggests that the number of known AF cases totalled 639,000, with 191,000 patients receiving anticoagulants and 234,000 receiving aspirin.[45] There is now clinical data proving that the stroke protection provided by anticoagulants is far superior to that of aspirin.[46] NICE guidelines urgently require revising as at present, the latest (2006) guidance recommends aspirin for some patients.

There are a number of factors which account for the sub-optimal treatment of AF patients. Until April 2012, GPs in both England and Wales were encouraged to provide antithrombotic therapy, of which antiplatelet treatment, for example aspirin, is easier to administer than warfarin. GPs are advised by NICE and other bodies (e.g. Health Improvement Scotland) to use anticoagulant drugs in patients with higher risk of stroke, but this does not always happen.

It is well known that in the UK that aspirin is ineffective at preventing stroke in patients with AF.[31] Aspirin is perceived by many HCPs to be an 'easy option', which does not require frequent monitoring - what is more concerning though is the wide belief that it is a safe and effective treatment. Even experienced doctors wrongly believe they are protecting people by recommending aspirin. A recent study showed that doctors do take into account a patient's stroke risk, but instead of becoming more likely to prescribe an anticoagulant as the risk increases, they are more likely to prescribe aspirin instead.[47]

"Many patients and doctors are inappropriately reassured having had aspirin therapy introduced instead of anticoagulation. Yet aspirin is not without risk and yet is of little benefit."

Dr. Paul Kalra

Key points

- NICE estimates that between 70 and 80 per cent of patients with AF are eligible for treatment with an anticoagulant, yet this is not reflected in real-life clinical practice
- Aspirin continues to be routinely prescribed, despite clinical data demonstrating the clear benefit of anticoagulation therapy
- It is imperative that guidelines are updated to reflect that aspirin is ineffective at preventing stroke in patients with AF.

Conclusions

Significant progress in managing cardiovascular disease has been made over the last decade, yet AF has been slow to advance up the public health agenda. The situation is improving but there is still a substantial unmet need.

There are potentially thousands of undiagnosed patients with AF in the UK. Improved diagnosis and better education of both the public and HCPs are vital in order to ensure that people with AF are optimally protected against stroke.

This report underlines that NICE guidelines regarding the treatment of AF are outdated and urgently require updating in light of latest evidence. It can be seen that referral criteria for AF patients is often a grey area, so improved guidance is also required to support GPs, with routine screening recommended to be introduced for the over 65s.

Despite the proven efficacy of warfarin in terms of stroke prevention, the drug is used less than recommended in clinical guidelines. Aspirin continues to be frequently used and it is important that the belief that this is an effective treatment is dispelled amongst all HCPs.

The management of stroke prevention in people with AF is at a crossroads, with the advent of new anticoagulants likely to present increased treatment options for many doctors and patients in the near future.

Call to Action

The following 'Calls to Action' have been developed to help ensure better future care and management of patients with AF at risk of stroke in the UK.

Diagnosis and education

1. Increase public and healthcare professional awareness of atrial fibrillation and the link to stroke
2. Improve healthcare professional focus on atrial fibrillation, with emphasis on early diagnosis, determination of stroke risk and optimal treatment
3. Encourage opportunistic screening for atrial fibrillation at appropriate patient-doctor contacts
4. Encourage the prompt revision of NICE guidelines for appropriate use of antithrombotic therapy in patients with atrial fibrillation at risk of stroke, in collaboration with professional societies/expert groups.

Patient pathway

1. Provide clear guidance to healthcare professionals on the optimal patient pathway to ensure better stroke protection and appropriate management of patients through primary and/or secondary care
2. Encourage appropriate referral of atrial fibrillation patients to specialist care
3. Improve communication between the patient and healthcare professionals, so that patients are aware of the dangers of atrial fibrillation and are well informed about their condition and advantages and disadvantages of treatment.

Treatments

1. Update healthcare professionals about the lack of adequate data to support the use of aspirin and discourage its inappropriate use for stroke prevention in atrial fibrillation
2. Ensure that all at risk patients are protected against life-threatening strokes through the appropriate prescription of anticoagulants
3. Prevent postcode lottery prescribing by ensuring that new anticoagulants are available as a treatment choice for doctors and patients across the UK.

Glossary of terms

Anticoagulant

Anticoagulant medicines alter the ability of the blood to clot (coagulation means clotting). They are used to reduce the risk of clots forming that can lead to complications such as stroke.[48] Warfarin is the most common anticoagulant used in the UK.[49]

Antiplatelet agents

Antiplatelet medicines reduce the chance of blood clots from forming by stopping platelets from sticking together.[50] Aspirin is a common antiplatelet agent.

Arrhythmia

An arrhythmia is an abnormality of the rate or rhythm of the heartbeat. During an arrhythmia, the heart can beat too fast, too slow, or with an irregular rhythm.[51]

Atrial fibrillation (AF)

Atrial fibrillation is the most common sustained heart rhythm disturbance which causes an irregular and often abnormally fast heart rate.[52] People with AF are five times more likely to have a stroke than people without AF.[1]

CHADS scoring

$CHADS_2$ is a simple algorithm based on clinical trial results to help recall the major stroke risk factors in people who have atrial fibrillation. The name is made from the first letter of each factor. $CHADS_2$ assigns one point each for cardiac failure (C), high blood pressure (H), age 75 or older (A), and diabetes (D), and two points for a previous stroke (S2) or transient ischemic attack, called a mini-stroke.[4] Due to some limitations with $CHADS_2$ a further development was made, called the CHA_2DS_2VASc to complement the scheme. This extends $CHADS_2$ by adding additional common risk factors: vascular disease (V), age 65-74 years (A) and female sex category (Sc).[4]

ECG

ECG (electrocardiogram) is a test that records the electrical activity of the heart.[28] An ECG reveals rhythm problems such as the cause of a slow or fast heart beat.

ESC guidelines

In order to improve clinical practice, the Committee for Practice Guidelines assembles groups of European experts to create recommendations and guidelines for clinical practice. These recommendations and guidelines mostly rely on evidence from clinical trials and registries to clarify areas of consensus and disagreement, allowing distribution of the best possible guidance to practicing physicians.[9]

GRASP-AF

GRASP-AF is a free computer tool for GPs, which allows them to analyse patient records swiftly and easily for those at risk of stroke because of AF. The tool automatically calculates $CHADS_2$ or CHA_2DS_2VASc scores for all patients, identifying all those in need of anticoagulation.[11]

HCP

Health care professional

Ischaemic stroke

Ischaemic stroke occurs as a result of an obstruction within a blood vessel supplying blood to the brain. This type of stroke accounts for about 85 percent of all stroke cases.[18] The other common type of stroke is a haemorrhagic stroke, which occurs when a blood vessel bursts and bleeds into the brain (a haemorrhage).[18]

INR range

The INR (International Normalised Ratio) is a test of blood clotting, which is used to monitor warfarin therapy, where the aim is to maintain the INR in a certain range e.g. 2.0 to 3.0 which is specific for stroke prevention. It is initially checked frequently, but as treatment is stabilised it may be done less often. Changes in the warfarin dose take several days to affect the INR result.[4]

Novel oral anticoagulant

Novel oral anticoagulants are a new class of anticoagulant drugs. Unlike warfarin, patients on these new drugs are not required to regularly attend clinics to monitor their anticoagulation levels. There are no known food-drug interactions and fewer drug-drug interactions.[27]

NICE

The National Institute for Health and Clinical Excellence (NICE) was set up in 1999 to reduce variation in the availability and quality of NHS treatments and care - the so called 'postcode lottery'. NICE produces evidence-based guidance and other documents help resolve uncertainty about which medicines, treatments, procedures and devices represent the best quality care and which offer the best value for money for the NHS.[53]

PCT

Primary Care Trust

QOF

The Quality and Outcomes Framework (QOF) is a voluntary annual reward and incentive programme for all GP surgeries, detailing practice achievement results. It is not about performance management but resourcing and then rewarding good practice.[36]

TIA

Transient Ischaemic Attack, also called mini-strokes, occur when the blood supply to the brain is interrupted for a very short time.[54]

Warfarin

Warfarin is an anticoagulant medication. Anticoagulants are drugs that reduce blood clotting and are prescribed either to prevent clots forming in the blood, or to treat clots that have already appeared.[55]

Vitamin K antagonists

These anticoagulants reduce blood clotting by inhibiting the regeneration of reduced vitamin K which is essential for activation of specific coagulation factors. The most commonly used example of a vitamin K antagonist in the UK is warfarin.[56]

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