Implementing evidence based medicine in general practice: audit and qualitative study of antithrombotic treatment for atrial fibrillation

Alistair Howitt, David Armstrong

Warders Medical Centre, Tonbridge, Kent TN9 1LA
Alistair Howitt, *principal in general practice*

Department of General Practice, Guy's, King's And St Thomas' School of Medicine, London SE11 6SP
David Armstrong, *reader in sociology as applied to medicine*

Correspondence to: Dr Howitt ajhowitt@warders.co.uk

BMJ 1999;318:1324–7

Abstract

Objective To determine the extent to which implementation of an evidence based treatment, antithrombotic treatment in atrial fibrillation, is possible in general practice.
Design Audit and qualitative study of patients with atrial fibrillation and an educational intervention for patients judged eligible for antithrombotic treatment.
Setting South east England.
Subjects 56 patients with a history of atrial fibrillation.
Interventions Assessment and interview to ascertain patients' views on antithrombotic treatment.
Main outcome measures Number of patients receiving antithrombotic treatment.
Results Out of 13 239 patients, 132 had a history of atrial fibrillation of which 100 were at risk of thromboembolism. After the study, 52 patients were taking warfarin. Of the remaining 48 patients (of whom 41 were taking aspirin), eight were too ill to participate, 16 were unable to consent, four refused the interview, and 20 declined warfarin. Patients declining warfarin were inclined to seek a higher level of benefit than those taking it, as measured by the minimal clinically important difference. Qualitative data obtained during the interviews suggested that patients' health beliefs were important factors in determining their choice of treatment.
Conclusion Patients' unwillingness to take warfarin seemed to be a major factor in limiting the number who would eventually take it.

Introduction

Despite the efficacy of antithrombotic treatment in preventing stroke in patients with atrial fibrillation,[1] community surveys report a low uptake of such treatment.[2–4] Suggested explanations include general practitioners' reluctance to initiate and monitor treatment,[5] practical difficulties in anticoagulating elderly housebound patients,[6] and lack of authoritative guidelines.[7] Yet a major part of the problem may relate to the proportion of patients eligible for treatment. Clinical trials, from which evidence for effectiveness is derived, usually exclude certain groups of patients, and trial conclusions might not be appropriate for these patients. Patients in clinical trials may also differ from others in their willingness to accept treatment.

The applicability of evidence based medicine to everyday general practice therefore needs to take account of these constraints. The potential scale of any success for an eligible group of patients will be limited by exclusion of those patients for whom treatment would be inappropriate and those who decline after their personal risk is explained. We carried out such an exercise in a general practice, with antithrombotic treatment in atrial fibrillation.

Subjects and methods

Setting and subjects

We conducted our study in a predominantly urban practice in South east England with 13 239 registered patients. We searched the practice's computer database for patients for whom a diagnosis of atrial fibrillation had been recorded and also for all patients who had been prescribed digoxin. We then examined the paper records to confirm the diagnosis.

Measures and procedure

Details of the patients' age, medical history, contraindications to warfarin, housing, and mobility were recorded. Current antithrombotic treatment was recorded as warfarin, aspirin, or no treatment. For patients on warfarin, presence of an additional indication was recorded.

Where records were unclear or incomplete, we invited patients to attend for review. Patients were then categorised by their risk of thromboembolism: currently at risk were patients with chronic or paroxysmal atrial fibrillation; not currently at risk or at low risk were patients with transient atrial fibrillation (only one episode recorded, for example, postoperatively), patients with documented persistent atrial fibrillation, but currently in a regular rhythm (for example, treated thyrotoxicosis and paroxysmal atrial fibrillation not noted in the past 18 months), and patients aged less than 60 years with no additional clinical risk factors.[8]

We stratified patients currently at risk by risk of stroke,[9] and we assessed for eligibility to attend a structured educational interview to discuss antithrombotic treatment. We excluded those who were taking warfarin for an additional indication, those unable to

give informed consent (for example, through dementia), or those too ill to participate. We included all other patients with atrial fibrillation, whether taking warfarin or not. Patients were initially approached during consultations or by telephone. We sent a letter with details of the study to those agreeing to participate. Patients unable to attend the surgery were seen at home.

Educational intervention

We asked patients if they were aware that they were at increased risk of stroke and if they were, to give an estimate of that risk.

We used a structured method of giving information about the nature and consequences of having a stroke. Detailed information about aspirin and warfarin treatment was also given. Patients were shown a pictorial representation of their predicted annual risk of stroke (either 4%, 8%, or 12%) and the expected benefits of treatment, amended from the method described by Man-Son-Hing and colleagues,[10] to include risk stratification[9] and aspirin as an alternative treatment to warfarin (figure). They were asked which, if any, treatment they would choose, and from this we derived the minimal clinically important difference for warfarin, which is the minimum level of benefit for which they would take warfarin. We recorded this as a percentage reduction in their annual risk of stroke.

During the interviews we made notes of patients' comments and reactions to the information they were given.

We screened patients for conditions associated with atrial fibrillation and other risk factors for stroke. They were all offered echocardiography, which was performed by an experienced echocardiographer within a week of consultation. The report included estimates of left atrial size, left ventricular function, and ejection fraction.

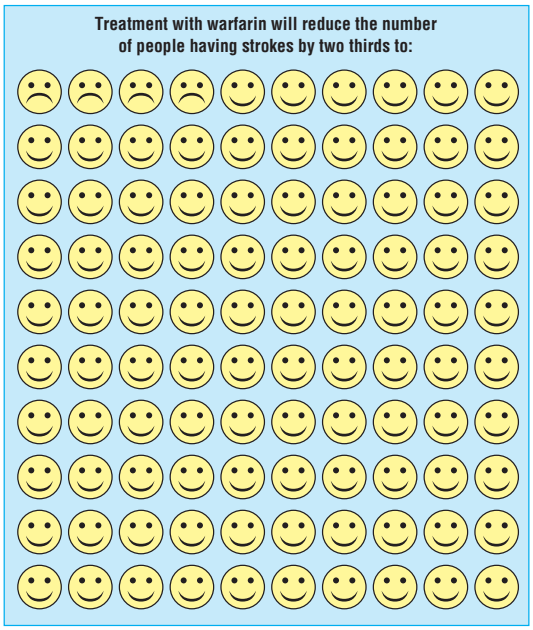
The patients then attended a second interview to decide the antithrombotic treatment they wanted to receive. We recorded the treatment taken after the study.

We analysed data using SPSS for Windows. We performed analyses using χ^2 for cross tabulations, independent samples *t* test for two group comparisons, and analysis of variance for multiple group comparisons.

Results

We identified 132 patients with a history of atrial fibrillation of whom 100 were judged eligible for warfarin. Of these, we excluded 16 who were unable to consent, eight who were too ill to participate, and 16 who had other clinical indications for taking warfarin. Of the remaining 60 patients, 56 (93%) consented to be interviewed. There was no difference in age or duration of fibrillation between patients attending for interview and the other 44 patients also at risk who were not invited or declined to attend. These 44 patients were more likely to have a history of stroke (χ^2 5.87, $P<0.05$), falls (Fisher's exact test, $P<0.05$), and frailty (Fisher's exact test, $P<0.01$).

Before the study, 43 patients were taking warfarin, and subsequently 10 patients from the interview group started warfarin. Another seven patients who were taking no treatment started aspirin. One patient who had recently started warfarin to cover an unsuccessful cardioversion decided to switch to aspirin.



Pictorial representation of expected benefit of warfarin treatment shown to patients with predicted annual risk of stroke without any treatment of 12%

None of the clinical sociodemographic variables or the severity measure of predicted annual stroke rate predicted which patients would start warfarin. Twenty nine patients (52%) agreed to echocardiography, but only one started warfarin because of the test result.

Patients' involvement

Most patients (61%, 34/56) were unaware that they were at risk of stroke, and of those who were aware only two felt able to give an annual estimate of the risk. Of the patients taking warfarin, eight of 17 (47%) were not aware of the risk. Several patients were also unaware that they had an irregular pulse.

Not all patients felt able to make a judgment that could inform derivation of their minimal clinically important difference for warfarin. For those that did, 15 patients already taking warfarin were willing to take it for a lower level of benefit than 20 not taking it, with a mean minimal clinically important difference of 2.4% per annum versus a mean of 4.1% (*t* test 2.19, $P=0.036$). A one way analysis of variance test showed no differences in minimal clinically important difference with differing degrees of risk. The importance of the patients' view of the balance of risk was also evident. Patients' own judgment of their minimal clinically important difference predicted those patients who were going to start warfarin, with a mean minimal clinically important difference at the first interview of 2.56% for those starting warfarin and 4.86% for those not starting warfarin (*t* test 2.93, $P<0.05$).

Although the patients made comparatively few comments about their illness and its treatment at their interview, there were some common themes. For example, many patients who decided not to have warfarin did not see themselves at risk whereas patients choosing warfarin feared the effects of a stroke (box 1).

Box 1—Health beliefs

Perceived vulnerability

"I'm not going to have a stroke anyway . . . confident good span of life in front of me." (Patient 12, final treatment aspirin.)

"People who have strokes are overweight, drink and smoke. I don't think it will happen." (Patient 16, final treatment aspirin.)

Perceived seriousness

"If I had a bad stroke, I'd be as good as dead." (Patient 85, started warfarin.)

"I'd rather have a heart attack than a stroke . . . I think stroke is the worst thing out." (Patient 105, started warfarin.)

Box 2—Attitudes to death

Seeking to prolong life

"It'll give me a couple of extra years." (Patient 26, aged 82, started warfarin.)

"I want to prolong my life as long as possible." (Patient 120, aged 90, started warfarin.)

Accepting death

"Life's precious, in for a penny, in for a pound. It will eventually happen and I'd rather go as naturally as possible." (Patient 128, aged 90, declined warfarin.)

"Here you are trying to extend the life of an aged person, it's illogical." (Patient 108, aged 86, declined any treatment.)

Box 3—Attitudes to change

"I'm feeling a lot better, pity if I've got to change . . . if I change it over, I'll knock it all back again." (Patient 25, decided to continue aspirin.)

"I'd be delighted to come off warfarin . . . [although] I haven't the nerve to give it up." (Patient 81, continued warfarin.)

For others, their advanced age and impending death was an issue. Their response to it was, however, varied and unpredictable. Some seized the chance to prolong their lives whereas others accepted that their lives were limited and did not seem to want them artificially extended (box 2). Many patients included in their responses attitudes to change in treatment, which were almost always negative, and many feared the consequences of altering their treatment (box 3).

Discussion

The prevalence rates of atrial fibrillation reported here are similar to those in recent studies from the United Kingdom, suggesting that identification of patients in our study had comparable efficiency.[2–4 11] But out of 132 patients with a recorded history of atrial fibrillation—and 100 in whom it was judged clinically appropriate—only 52 were taking warfarin at the end of study. Of these, most were already taking it and only 10 started warfarin—that is, even with careful case finding and follow up a large proportion of patients with atrial fibrillation could not be changed to an overtly more effective treatment.

Our study was conducted in only one practice and others might have different background prevalences of atrial fibrillation, concurrent illnesses, and patient responses. The proportion of patients taking warfarin before the intervention was higher than in other studies,[2–4 11] suggesting that the final proportion in our study was not unrepresentatively low. The fact that a half of eligible patients received warfarin after intensive exploration of best management for each patient suggests a major constraint on the uptake of evidence based medicine and a serious dilution of its potential impact.

Why was there such a small effect?

Four groups of patients can be identified out those judged clinically eligible for warfarin: a small group already taking the drug for other reasons; a group comprising those patients who were taking warfarin solely for their fibrillation after the study; a group, about a quarter of those eligible, who could not be offered treatment because of other factors such as concurrent illness and dementia (as trial protocols often exclude such patients it is clear that trials over estimate the value of treatment in terms of the standard index of number needed to treat); and a group who ultimately declined to be assessed or to start treatment, even though clinically suited. So why did some patients agree to take the drug while others declined?

Sociodemographic factors, including age, did not relate to uptake nor did the presence of additional clinical risk factors. One factor that seemed to make a difference was the measure of patients' willingness to take risks. This finding was further amplified by the patients' comments on treatment. These illustrate the importance of patients' beliefs about the value of treatment, their assessment of personal risk, and their reluctance to change their drugs in the final management decision.

Problems with implementation

Our study also puts into context the view that the problem lies in the difficulty of changing doctors' behaviour to be more in accord with current best evidence. Certainly, changing clinical behaviour may not be easy but this must be seen in the light of other significant barriers to implementing evidence based medicine in general practice.

The first level of implementation, assessing evidence on effectiveness, is essentially population based as it advises on the proportion likely to benefit out of a defined group of patients with the condition. But in applying this evidence to individual patients in routine practice, two further assessments of this evidence need to me made. Firstly, a practitioner based assessment to identify individuals who may benefit from the treatment and secondly, the individual patient has to make the decision as to whether, given the advantages and disadvantages, the treatment is worth taking. Our study has addressed these two, often neglected, stages in the implementation process and illustrates that consent lies at the heart of the third level of implementation—namely, the patient's agreement to take the treatment. Had patients in this study been expressly advised to start warfarin then perhaps the

Key messages

- After a structured intervention only half of a group of apparently eligible patients ended up taking warfarin for their atrial fibrillation
- Implementation of warfarin treatment for patients with atrial fibrillation was constrained by patients who were either too ill to take the drug or were unable to give consent
- These constraints are compounded by the unwillingness of patients to reduce their risk by taking a proved drug
- The number needed to treat, a key statistic in evidence based medicine, probably often overestimates the value of treatment in routine general practice and may not be sufficient to persuade patients of the benefit of treatment

uptake would have been greater. For example, general practitioners overrode a decision to start warfarin in 18 out of 44 patients who were willing to take it after being advised by a doctor involved in a research project.[2] But the approach reported here suggests that a patient centred method, in which as many patients as possible are given an active role in deciding their treatment, produces a less successful outcome regarding warfarin uptake but perhaps a better one regarding the ethics of patient management. It might seem ironic that it is patients who represent an important impediment to implementation of effective treatment given that they apparently have most to benefit, but without their support evidence based medicine is likely to have only limited applicability in general practice.

We thank Mr Chris Byrne for performing the echocardiography. Tunbridge Wells local research ethics committee approved the study.

Contributors: Our study derives from an MSc in general practice project carried out at Guy's, King's and St Thomas' School of Medicine. AH initiated the study design, analysed the data, and drafted the paper. DA contributed to the study design and the drafting of the paper. Both AH and DA will act as guarantors for the paper.

Funding: NHS Executive-South Thames.

Competing interests: None declared.

1 Atrial Fibrillation Investigators. Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation. Analysis of pooled data from five randomized controlled trials. *Arch Intern Med* 1994;154:1449-57.
2 Wheeldon NM, Tayler DI, Anagnostou E, Cook D, Wales C, Oakley GDG. Screening for atrial fibrillation in primary care. *Heart* 1998;79:50-5.
3 Sudlow M, Thomson R, Thwaites B, Rodgers H, Kenny RA. Prevalence of atrial fibrillation and eligibility for anticoagulants in the community. *Lancet* 1998;352:1167-71.
4 Lip GYH, Golding DJ, Nazir M, Beevers DG, Child DL, Fletcher RI. A survey of atrial fibrillation in general practice: the West Birmingham atrial fibrillation project. *Br J Gen Pract* 1997;47:285-9.
5 Taylor F, Ramsay M, Voke J, Cohen H. Anticoagulation in patients with atrial fibrillation. GPs not prepared for monitoring anticoagulation. *BMJ* 1993;307:1493.
6 Roderick E, Cox J. Non-valvular atrial fibrillation. *Br J Gen Pract* 1997;47:660-1.
7 Thomson R, McElroy H, Sudlow M. Guidelines on anticoagulant treatment in atrial fibrillation in Great Britain: variation in content and implications for treatment. *BMJ* 1998;316:509-13.
8 Stroke Prevention in Atrial Fibrillation Investigators. Predictors of thromboembolism in atrial fibrillation. I. Clinical features of patients at risk. *Ann Intern Med* 1992;116:1-5.
9 Lip GY, Lowe GD. ABC of atrial fibrillation. Antithrombotic treatment for atrial fibrillation. *BMJ* 1996;312:45-9.
10 Man-Son-Hing M, Laupacis A, O'Connor A, Wells G, Lemelin J, Wood W, et al. Warfarin for atrial fibrillation. The patient's perspective. *Arch Intern Med* 1996;156:1841-8.
11 O'Connell JE, Gray CS. Atrial fibrillation and stroke prevention in the community. *Age Ageing* 1996;25:307-9.

(Accepted 31 March 1999)

Thirty one years on

A memorable patient

"Curmudgeonly, depressed, introspective. . . ." As I glanced through the previous letters about the patient I was about to see in the rheumatology outpatient department I wondered what she would look like. When she came in I was not surprised. She was thin, sallow, and unsmiling. A quick look at the old notes told me that she had rheumatoid arthritis, but repeated comments in the folder implied that the symptoms considerably exceeded the signs.

We began to speak about her arthritis; she had pain everywhere, but when I examined her I was impressed by the normality of her joints. I looked at the fatness of the folder in front of me and began to thumb through it for any clues as to why she seemed to be making such heavy weather of her symptoms.

A single sheet caught my eye. The handwriting was similar to my own, and, unusually, the notes had been written in fountain pen. I looked at the date: 1967. The note concerned the delivery of her second baby; she was gravida four para, one plus two; the first two pregnancies had miscarried and the third resulted in a live birth. This labour, having been preceded by an antepartum haemorrhage, was the one supervised by the person who had written the note. I looked at the top right hand corner and saw my own name. I realised that I had delivered this patient 31 years previously when I was a medical student at the same hospital where I am now working. In between I had qualified, moved away, and worked as a junior doctor and then a general practitioner in Yorkshire for 22 years.

A year ago I decided to make a complete break with general practice and have been working part time in rheumatology. By the most extraordinary coincidence this woman happened to come to my clinic and by an even greater coincidence I found the note, despite the bulk of the folder, that I had written 31 years before.

When she emerged from the examination room I asked about her family. She now had four children: two boys, both soldiers, one serving in Germany and one in Bosnia; and two girls. The 31 year old son was the one in Bosnia. I then said that I had delivered him and immediately a bond formed between us. It did not matter that I did not remember her and she did not remember me. She told me about the pregnancy, about the length of the labour, and the fact that the baby weighed 9 pounds and 9 ounces. She told me about the difficulties of her marriage and that it had finally ended 13 years previously. She told me of the complete rupture in the relationship between her and one of her daughters and how difficult she found it with her boys far away.

As the conversation developed she became more and more animated and the sad, inward looking appearance gradually lifted. When she left the consulting room not only did I feel an unexpected empathy with the patient, but I believe that because of this extraordinary coincidence for a short time the sadnesses of her life and the pain of her arthritis may have temporarily lifted.

Richard Harding, *clinical assistant, Bath*

We welcome articles of up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake,* or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to.