

# Identification of patients with atrial fibrillation in UK community pharmacy: an evaluation of a new service

M. J. Twigg<sup>1</sup> · T. Thornley<sup>2</sup> · N. Scobie<sup>3</sup>

Received: 18 November 2015 / Accepted: 13 April 2016 / Published online: 23 April 2016  
© Springer International Publishing 2016

**Abstract** *Background* Many patients with atrial fibrillation (AF) are asymptomatic and diagnosed via opportunistic screening. Community pharmacy has been advocated as a potential resource for opportunistic screening and lifestyle interventions. *Objective* The objective of this evaluation is to describe the outcomes from an AF service, in terms of referrals and interventions provided to patients identified as not at risk. *Methods* Eligibility was assessed from pharmacy records and the completion of a short questionnaire. Once consented, patients were screened for AF and their blood pressure was measured. *Results* Of 594 patients screened, nine were identified as at risk of having AF and were referred to their GP. The service also identified 109 patients with undiagnosed hypertension, 176 patients with a Body Mass Index >30, 131 with an Audit-C score >5 and 59 smokers. Pharmacists provided 413 interventions in 326 patients aimed at weight reduction (239), alcohol consumption (123) and smoking cessation (51). *Conclusion* This evaluation characterises the interventions provided to, not only those identified with the target condition—in this case AF—but also those without it. The true outcome of these additional interventions, along with appropriate follow-up, should be the focus of future studies.

**Keywords** Atrial fibrillation · Community pharmacy · Pharmacy services · Risk assessment · United Kingdom

## Impact of findings on patients or practice

- Patients are willing to be screened for atrial fibrillation through community pharmacies.
- Screening can provide opportunities to identify other healthcare problems such as hypertension or poor lifestyle.
- Community pharmacists are able to provide brief advice to patients as a result of this opportunistic screening.

## Introduction

Atrial fibrillation (AF) is an arrhythmia that affects approximately 1–2 % of the population and can lead to an increased risk of stroke and circulatory failure [1]. Appropriately diagnosing and treating AF can reduce the risk of these complications, which are more costly in individuals with the condition [2]. Globally, many patients are asymptomatic and diagnosed as a result of an opportunistic screening [1]. With advances in technology and portability of devices, this screening can now take place in locations more convenient for patients. This approach has been trialled in hospital foyers and community pharmacies with different healthcare professionals [3, 4]. It has demonstrated that opportunistic screening can prove useful at identifying patients with AF, however, no research has been conducted to date in the context of the UK health system.

✉ M. J. Twigg  
m.twigg@uea.ac.uk

<sup>1</sup> School of Pharmacy, University of East Anglia, Norwich Research Park, Norwich NR4 7TJ, UK

<sup>2</sup> D90 EF08, Boots UK, Thane Road, Beeston, Nottingham NG90 1BS, UK

<sup>3</sup> Alphega Pharmacy UK, 43 Cox Lane, Chessington, Surrey KT9 1SN, UK

Community pharmacy has been advocated as a potential resource for opportunistic screening and associated lifestyle interventions [5]. Research has previously demonstrated the ability of pharmacies to screen patients and identify those at risk of developing other conditions, such as diabetes and cardiovascular disease [6, 7]. However, a limitation of previous studies is the lack of appropriate follow-up of referred patients and a description of the collateral benefits of the screening programme in terms of further interventions provided by the pharmacist, particularly to those patients not identified as being at risk of the condition.

### Aim of the study

The objective of this evaluation is to describe the outcomes from an AF service in UK community pharmacies in terms of referral outcomes and further interventions provided to those patients identified not at risk.

### Ethics approval

Approval for this service evaluation was obtained from the University East Anglia (UEA) Faculty of Medicine and Health. Anonymised data were provided to the evaluation team (MT) after service completion. No additional data were collected from patients other than that required for service provision.

### Methods

The service was delivered for 4 months (October 2014 to January 2015) in six independent pharmacies, with a private consultation area, in the Dartford, Gravesham and Swanley area of Kent, UK. Pharmacists received face-to-face training which included knowledge of the condition, service delivery information and how to use the equipment correctly (Microlife Watch BP Office Afib monitor and AliveCor Heart Monitor). In addition, they completed a distance learning package on the management of AF in primary care.

Posters and leaflets were produced to allow in-pharmacy marketing of the service so that patients could self-refer to the service. Additionally, patients were signposted to this service from others offered in the pharmacy such as smoking cessation and weight loss. Pre-booking appointments was not necessary. Recruitment to the service was by a member of the pharmacy team who identified whether patients met the following eligibility criteria:

- aged 65 or over or;
- aged 50–64 and diagnosed with one or more of the following conditions:
  - Hypertension
  - Heart failure
  - Raised cholesterol
  - Pulmonary embolism
  - Asthma/COPD
  - Diabetes or;
- aged 50–64 and have 2 or more lifestyle risk factors:
  - High consumption of alcohol
  - Smoker
  - Body Mass Index (BMI) > 25 kg/m<sup>2</sup>

Eligibility was assessed by asking patients to complete a short questionnaire to ascertain the information above, and from pharmacy medication records, where appropriate. Patients already diagnosed with AF were excluded from the service.

Pharmacy team members then explained the service to eligible patients and gained their consent to participate. The service provided patients with a consultation which gathered information about their lifestyle (including alcohol intake) and current medical conditions and screened them for the condition. The Audit-C questionnaire [8] was used to assess alcohol consumption. This is a three-statement questionnaire that assesses the potential risk of a person's drinking habits. A score of greater than five indicates harmful drinking. Patients were then screened for AF and had their blood pressure measured using a Microlife WatchBP Office Afib monitor [recommended by National Institute of Health and Care Excellence (NICE) for the detection of AF whilst monitoring blood pressure (BP)]. The monitor takes three simultaneous double-arm BP measurements whilst screening for AF. It has a sensitivity of 97–100 % and a specificity of 89 %. If the screen picks up evidence of AF, then a one-lead electrocardiogram (ECG) is conducted on the patient using an AliveCor Heart Monitor. This method of testing has been reported in more detail elsewhere in the literature [3, 4]. Both of these measurements were conducted by pharmacy team members including the pharmacist and other pharmacy staff. The consultation was predicted to last 20–25 min if an ECG was conducted or 15–20 min if not. This length of time was also dependent on the number of other interventions provided as part of the service. Data was not collected on the actual length of the consultations.

If the patient's measurements showed evidence of AF, the pharmacist sent the ECG reading electronically to an AliveCor cardiologist, based in the UK at a private medical centre, for analysis. The cardiologist returned an electronic analysis report to the pharmacist within 24 h. The pharmacist subsequently telephoned the patient to explain the

results. If a patient was required to see their GP, the pharmacist emailed the GP surgery with a copy of the ECG reading, analysis report from the cardiologist and supplementary information from the consultation. Patients referred to the GP were followed up by their pharmacist to determine the actions as a result of the referral.

Training ensured that feedback was provided in an appropriate manner, so that the patient was given a realistic assessment, but was not unnecessarily alarmed. During the consultation, all patients received advice on alcohol consumption, smoking, weight loss and hypertension, if risks were identified from the eligibility questionnaire or blood pressure results. This was conducted by either the pharmacy or a third party provider e.g. smoking cessation clinic.

All information captured during the delivery of the service was recorded on a central database used routinely to track community pharmacy service delivery in the UK.

## Results

594 eligible patients consented for the service, 87.7 % white British. Table 1 shows the patient characteristics for the service.

Of the 594 patients screened, nine were identified as at risk of having AF and were referred to their GP. Seven patients provided information to the pharmacist on the outcome of the GP referral. Five (0.8 % of total) had a diagnosis of AF (and were then prescribed medication), one with Torades de Pointes and one had not been diagnosed with any condition.

The service also identified 109 (18.4 %) patients who had a high blood pressure measurement and were not diagnosed with hypertension (who were subsequently referred to their GP), 176 (29.6 %) patients with a BMI greater than 30, 131 (22.1 %) with an Audit-C score greater than five (increased risk of drinking problems) and 59 (9.9 %) smokers. As a result, across the whole service, pharmacists provided 413 interventions in 326 (54.9 %) patients aimed at weight reduction [239 (57.9 %)], alcohol consumption [123 (29.8 %)] and smoking cessation [51

(12.3 %)]. Seventy-seven (23.6 %) patients received multiple interventions to address these problems.

## Discussion

This service aimed to identify patients with AF in an accessible and opportunistic manner. The identification of nine cases out of approximately 600 screens (1.5 %) indicates that this is potentially an alternate method of capturing these patients and aligns with previous identification rates explored in other settings and countries [3, 4]. This aligns closely with figures comparing no screening with opportunistic and systematic screening, which indicates that an opportunistic approach may be more cost effective for identifying cases of AF [9]. However, the collateral benefits of the service should also be highlighted. These were the identification of a large number of patients with undiagnosed hypertension and those with lifestyle risk factors for other long-term conditions e.g., diabetes and COPD. At the point of identification, the pharmacist was then able to provide appropriate and established pharmacy public health interventions to address these issues. Evidence from other studies suggests that patients view the pharmacist's involvement in public health services as good and they are satisfied with the service experience [10].

This service screened a large number of patients in an opportunistic manner, whilst making full use of the pharmacy team. The limitations of the evaluation centre on the lack of follow-up of patients who received advice regarding weight reduction, alcohol consumption or smoking cessation. Similarly, patients who were identified as having high blood pressure were not followed up to determine their actions as a result of the test. Patient and pharmacist feedback on the service was also not obtained which may have been useful to understand their reactions to discovering cases of AF.

## Conclusion

This evaluation supports previous work by Lowres and Le Page regarding opportunistic screening for AF in settings other than the clinic or GP surgery. Our work goes further than other screening service evaluations for other conditions by characterising the interventions provided to, not only those identified with the target condition—in this case AF—but those without it. This demonstrates that pharmacies can provide this type of screening service and public health interventions as part of routine practice. However, the true effect of these additional interventions, along with appropriate follow-up, should be the focus of future studies.

**Table 1** Patient characteristics

Patient characteristic	N	Mean (SD)
Age	594	68.3 (8.9)
Number of regular medicines	184	2.8 (2.1)
BMI	594	27.8 (5.3)
Systolic blood pressure	594	137.8 (17.9)
Diastolic blood pressure	594	78.2 (10.9)
Audit-C score	594	2.7 (2.7)

**Acknowledgments** The authors wish to thank the pharmacists who provided the service.

**Funding** The implementation of this service was funded by Alpha pharmacy and the pharmacists received no additional payment for providing it to their patients.

**Conflicts of interest** None.

## References

1. Lip GYH, Tse HF, Lane DA. Atrial fibrillation. *Lancet*. 2012;379(9816):648–61.
2. Brüggjenjürgen B, Rossnagel K, Roll S, Andersson FL, Selim D, Müller-Nordhorn J, et al. The impact of atrial fibrillation on the cost of stroke: the Berlin acute stroke study. *Value Health*. 2007;10(2):137–43.
3. Le Page P, MacLachlan H, Anderson L, Penn L-A, Moss A, Mitchell AR. The efficacy of a smartphone ECG application for cardiac screening in an unselected island population. *Br J Cardiol*. 2015;22:31–3.
4. Lowres N, Neubeck L, Salkeld G, Krass I, McLachlan AJ, Redfern J, et al. Feasibility and cost-effectiveness of stroke prevention through community screening for atrial fibrillation using iPhone ECG in pharmacies. The SEARCH-AF study. *Thromb Haemost*. 2014;111(6):1167–76.
5. Department of Health. Pharmacy in England: building on strengths—delivering the future. London: The Stationery Office; 2008. ISBN 978-0-10-173412-7.
6. Twigg MJ, Wright DJ, Thornley T, Haynes L. Community pharmacy type 2 diabetes risk assessment: demographics and risk results. *Int J Pharm Pract*. 2015;23(1):80–2.
7. Willis A, Rivers P, Gray LJ, Davies M, Khunti K. The effectiveness of screening for diabetes and cardiovascular disease risk factors in a community pharmacy setting. *PLoS ONE*. 2014;9(4):e91157.
8. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA, for the Ambulatory Care Quality Improvement P. The audit alcohol consumption questions (audit-c): an effective brief screening test for problem drinking. *Arch Intern Med*. 1998;158(16):1789–95.
9. Hobbs R, Fitzmaurice D, Jowett S, Mant J, Murray E. 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. *Health Technol Assess*. 2005;9(40):90.
10. Eades CE, Ferguson JS, O’Carroll RE. Public health in community pharmacy: a systematic review of pharmacist and consumer views. *BMC Public Health*. 2011;11:582.