

Checking for an irregular pulse in community pharmacies in Spain. "Results of the project Know your pulse 2016 and 2017"

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ABBREVIATIONS

AF: Atrial fibrillation.
AFA: Atrial Fibrillation Association.
AMI: Acute myocardial infarction.
APC: Arterial pulse check.
ATC: Anatomical, Therapeutic, Chemical classification system.
CHA₂DS₂: Cardiac failure, Hypertension, Age, Diabetes, Stroke (Doubled).
CHF: Congestive heart failure.
CPH: Community pharmacist
CVA: Cerebral vascular accident.
DVT: Deep vein thrombosis.
ESC: European Society of Cardiology.
HTN: Hypertension
INE: Instituto Nacional de Estadísticas [National Institute of Statistics].
IPACT: International Pharmacists Anticoagulation Task Force.
KYP: "Know your pulse" campaign.
LOPD: Organic Law on Data Protection.
LVD: Left ventricle dysfunction.
NPT: Non-pulmonary thromboembolism.
PAD: Peripheral arterial disease.
SD: Standard deviation.
SEFAC: Sociedad Española de Farmacia Familiar y Comunitaria [Spanish Society of Family and Community Pharmacy] (SEFAC)

ABSTRACT

Aims: To assess the effectiveness of screening for an irregular pulse by community pharmacists piloting a method and procedure for an irregular pulse detection campaign in community pharmacies in Spain.

Methods: Descriptive cross-sectional study conducted by SEFAC partner community pharmacists from November 24–29, 2016, and June 5–11, 2017. Inclusion criteria: users ≥ 40 years, without AF or with AF but not on anticoagulant treatment. Main variables: pulse (beats/minute) and CHA₂DS₂ VASc.

Results: There were 789 pulse measurements taken in both campaigns, from which it was found that 41 (5.2%) participants had an irregular pulse, Thirty-five (4.3%) were referred to their family doctors, which lead to confirmation of 12 (1.5%) new diagnoses of AF with 7 (0.9%) of them initiating anticoagulant treatment.

More than 80% of the participants did not present any clinical symptoms of AF and 41.9% suffered from hypertension. The number of patients with CHA₂DS₂ VASc ≥ 2 and an irregular pulse was 17 (3.9%), of which 10 (58.8%) were not in treatment; 5 (29.4%) were in antiplatelet therapy and 2 (11.8%) were on anticoagulant treatment.

Conclusions: Both the high number of patients with diagnosed AF and not in treatment and the significant number of patients with an irregular pulse and suspected AF detected, demonstrate the capacity and efficacy of the community pharmacy in screening for an irregular pulse, thus contributing to the detection of new cases of AF.

KEYWORDS

Atrial fibrillation, stroke, irregular pulse, community pharmacy, screening

Received: 2019/11/28

Accepted: 2019/12/09

Available online: 2019/12/30

Funding: fully financed with SEFAC funding. Material, web. SEFAC.

Conflicts of interests: none.

Cite this article as: Mera I, Fornos JA, Tous S, Perseguer Z, Escudero I, Murillo L, Mera R, Andrés NF. Checking for an irregular pulse in community pharmacies in Spain. "Results of the project Know your pulse 2016 and 2017". *Farmacéuticos Comunitarios*. 2019 Dec 30;11(4):5-20. doi:10.5672/FC.2173-9218.2019/Vol11.004.02

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Introduction

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia in clinical practice. The disordered and irregular heart rhythm incapacitates the heart effectively causing atrial contractions. It is one of the most significant risk factors for ischemic stroke, multiplying the risk of cerebrovascular accident (CVA) by five (1,2). Other predictive risk factors are age, hypertension, diabetes mellitus, left ventricular dysfunction and cardiovascular disease (3).

According to the World Health Organization, the average incidence of stroke in 2015 was approximately 200 cases per year per 100,000 inhabitants (4). This increased gradually from age 55, and reached 50% of cases for people over the age of 80 (4,5). In Spain, according to the National Institute of Statistics (INE), it was the second leading cause of death in men and the first in women in 2014 (6). In 2017, stroke became the leading cause of death for both sexes (7). In recent years, however, there has been a decrease in mortality from stroke, due to the rise in prevention campaigns such as the current "Heart Rhythm Week" (8) and secondary prevention measures.

Nevertheless, the increase in the stroke survival rate leads to a high percentage of incapacitated patients, leading to an increase in health spending of approximately 5,000 euros per patient in the first year after a stroke (9). For patients with atrial fibrillation (AF), stroke is more serious, repetitive and disabling and therefore they have a worse prognosis (1).

In Europe, the prevalence of AF is 5.5% in people over 55 (10). Worldwide, it is 1.5-2.0% of the general population (11). In Spain, the prevalence of AF in people over 40 is 4.4%, rising to 9.3% between 70 and 80 years and 17.7% in people over 80 (12).

It is estimated that the prevalence of AF will increase by 2.5 in 2060 in comparison with the current year. It is estimated that nearly 18 million adults over the age of 55 will suffer from this arrhythmia (13). In the United States, the population with

this condition will exceed 10 million people. The main cause of this increase is the growing proportion of elderly people and the lack of control of major cardiovascular risk factors (14).

The prevalence of stroke associated with AF increases progressively with age, being 6.7 % in people 50 to 59 years of age and 36.2% in patients over 80 (15). AF is often asymptomatic and one of the first consequences to appear is usually stroke.

The primary objective in stroke prevention will be detection of AF and a personalized risk assessment for each person. This early diagnosis is paramount, as establishing anticoagulant treatment can prevent many strokes and major complications (16,17).

One of the tools available in the community pharmacy as opportunistic screening of AF is arterial pulse checks (APC) for the population at risk, though an electrocardiogram will be necessary to confirm AF (18).

Due to their accessibility and availability, community pharmacies can be an ideal place to detect an irregular pulse and give subsequent referral to a physician for evaluation and eventual diagnosis.

For this reason, the Spanish Society of Family and Community Pharmacy (SEFAC), in partnership with the Atrial Fibrillation Association (AFA) and the International Pharmacists AntiCoagulation Task force (IPACT), developed the international project "Know your pulse" (KYP) in 2016 and 2017 to assess the effectiveness of the pharmacy and community pharmacists (CPH) in the detection of asymptomatic atrial fibrillation, by taking the arterial pulse, to reduce its possible consequences with a special focus on reducing stroke and contributing to the proper treatment of arrhythmia and its consequences.

Aims

Main objective

- To evaluate the effectiveness of screening for an irregular pulse in Spanish community pharmacies.

Specific aims

- To pilot a method and procedure for irregular pulse detection in Spanish community pharmacies.
- To evaluate the usefulness of the community pharmacy as a suitable place for opportunistic screening of heart rhythm irregularities.
- To collaborate, through referral to a doctor, in the early diagnosis of asymptomatic atrial fibrillation to reduce its possible consequences.
- To determine the prevalence of heart rate irregularities in the sample included in the study.
- To compare the results of the 2016 and the 2017 campaigns.

Methods

Study design

Descriptive cross-sectional study conducted in Spanish community pharmacies by SEFAC partner pharmacists November 24–29, 2016, and June 5–11, 2017.

Subjects

Inclusion criteria: all users of the pharmacy ≥ 40 , who went to the participating community pharmacies in the week of 24 to 29 November 2016 and 5 to 11 June 2017 and agreed to participate in the study.

People with atrial fibrillation not on anticoagulant treatment were included. A diagnosis of AF was assumed, even if the patient was unaware, for those with any of the following anti-arrhythmic prescriptions:

- Class Ia: Procainamide (Biocoryl®), disopyramide (Dicorynan®).
- Class Ic: Propafenone (Rytmonorm®), Flecainide (Apocard®).
- Class III: Amiodarone (Trangorex®), Dronedarone (Multaq®), Sotalol (Sotapor®).
- Others: Digoxin.

Exclusion criteria: people already diagnosed with atrial fibrillation and on anticoagulant treatment.

Any person who was prescribed or taking blood thinners, unless indicated for a limited time due to deep vein thrombosis (DVT); warfarin, acenocoumarol, apixaban, edoxaban,

rivaroxaban or dabigatran, including non-oral forms (heparin).

Sample size calculation

Both studies, 2016 and 2017, were considered pilot studies for the procedure and the methodology, so a calculation of sample size was not carried out and consequently the results will only be representative of the participating sample.

Variables

- Age (years) and sex (male/female).
- Previous diagnosis (YES/NO).
- Anticoagulant/antiplatelet therapy (YES/NO).
- Pulse (beats per minute).
- Diabetes (YES/NO/DON'T KNOW).
- Are you experiencing any of these symptoms? (YES/NO/DON'T KNOWN): irregular pulse, shortness of breath, shortness of breath with palpitations, chest pain, chest pain with palpitations, rapid pulse, rapid pulse at rest, rapid pulse during exercise, fatigue or swollen ankles.
- Have you had any of these problems or treatments? (YES/NO/DON'T KNOW): myocardial infarction, transient ischemic attack, ablation treatment, vascular disease/problem of arteries, pacemaker implantation, hypertension, alteration of the thyroid, heart failure, cardiac surgery, electrical cardioversion.
- Have you received a definitive diagnosis of: atrial fibrillation or atrial flutter. (YES/NO).
- Does your heart rhythm problem: Occur as attacks? (YES/NO) Is it present all the time?(YES/NO).
- Are you currently, or have you ever been treated with any of these medications? amiodarone, apixaban, aspirin, beta-blockers, calcium antagonists (diltiazem, verapamil), clopidogrel, digoxin, dronedarone, dabigatran, edoxaban, flecainide and propafenone, rivaroxaban, sotalol, verapamil, warfarin, statins, vitamin supplements/alternative remedies. (YES/NO).

- Have you seen any other doctor to treat this problem? (YES/NO): family doctor, emergency room physician, hospital doctor, cardiologist/electrophysiologist, nurse specializing in arrhythmias. (YES/NO).
- Have you had any of the following tests? electrocardiogram at rest, exercise electrocardiogram, electrocardiogram monitoring for 24 hours/48 hours/7 days/14 days, echo/scanner of the heart, thyroid function test, other blood test. (YES/NO)
- Do you have a copy of your electrocardiogram? when the rhythm is normal? (YES/NO), when there is an abnormal rhythm? (YES/NO).
- CHAD₂S₂ VASc score (points).
- Referral to doctor (YES/NO).
- Doctor's response: diagnosis (YES/NO), initiate treatment (YES/NO).

Procedure

Selection of participating pharmacists

Participation in the study was offered to community pharmacies belonging to the SEFAC Blood Pressure and Vascular Risk Working Group and Diabetes Working Group.

Online training was conducted which included audiovisual material from the Oporto Faculty of Pharmacy on the physiology and pathology of arrhythmias, correctly taking the pulse, heart rhythm and heart rate, as well as the consequences of atrial fibrillation.

The training provided participants with explanations on the protocol to apply, how to conduct patient selection and data collection, and prior experience in the use of isolated pulse taking as screening for atrial fibrillation, the registration process and delivery of the surveys conducted.

Special attention was paid to communication with other health professionals when making referrals and how to record their responses.

All pharmacists had access to the outreach material, which included posters (figure 1), patient brochures

with a checklist of symptoms intended for patients (figure 2), surveys (figures 3 and 4) and doctor referral forms in the 2017 campaign. All the material was available in Spanish, Galician and Catalan.

Screening for atrial fibrillation (figure 5)

Phase 1. Selection of individuals

It was proposed to the community pharmacy to check three people per day for six days, until reaching a minimum of 15 patients per campaign and pharmacy. This was done randomly or by people who showed interest in the campaign poster and met the inclusion criteria.

To effectively exclude patients who were unaware if they were suffering from AF, they were asked if they took any of the following treatments:

- Class Ia: Procainamide (Biocoryl®), Disopyramide (Dicorynan®).
- Class Ic: Propafenone (Rytmonorm®), Flecainide (Apocard®).
- Class III: Amiodarone (Trangorex®), Dronedarone (Multaq®), Sotalol (Sotapor®).
- Others: Digoxin.

If they were treated with anticoagulants, unless indicated for another reason and for a short time. This included warfarin, acenocoumarol, apixaban, edoxaban, rivaroxaban or dabigatran, including non-oral forms (heparin)

Phase 2. Measuring the pulse and giving the questionnaire:

While the patient was at rest for five minutes, seated, they filled in the questionnaire (2016) (figure 3) or took the survey (2017) (figure 4).

After five minutes at rest, the radial pulse only was taken, using the index, middle, and ring fingers for 30 seconds. If an arrhythmic pulse was detected it was taken for 60 seconds and the arterial frequency was taken.

The procedure for taking the pulse and the importance of periodic checks were explained, both by them and, preferably, by a healthcare professional.

Phase 3. Referral to primary care doctor

They were referred to a primary care doctor, by means of a referral form, if:

- The patient had an irregular pulse.
- The patient's pulse was <50 or >100 beats per minute.
- The patient was on treatment that was unsuitable for atrial fibrillation.

Phase 4. Response of primary care doctor

The diagnosis established by the primary care doctor or specialist was registered and whether or not the prescribed medication had been initiated.

Phase 5. Delivery of the study information

The data were entered, anonymizing the identity of the subjects, through the web page: <http://afa.ipact.org/heart>

Statistical analysis

The SPSS® 22.0 for Windows® program was used for data analysis. Qualitative data were expressed as percentages and quantitative as mean ± standard deviation.

We used the chi-square or Fisher test to analyze qualitative variables, and the Student *t* test for quantitative variables with normal distribution and the U Mann-Whitney test for quantitative variables with abnormal distribution. The correlation of quantitative variables was conducted with the Pearson *r* correlation or Spearman's Rho. Statistical significance was set at $p < 0.05$ for all analyses.

Ethical considerations

Confidentiality of information

The people included participated voluntarily and, prior to their inclusion in the study, they were informed of its objectives and methodology as well as the preservation of the confidentiality of their identity and all their data.

The study was carried out in accordance with the requirements expressed in the Declaration of Helsinki

(October 2008 revision), as well as in the legislation in force in Spain.

The pharmacist at the community pharmacy included in the study met the high-level security measures set for managing patient health and medication data, complying with the provisions of the Organic Law on Data Protection (LOPD) for high level security files and the Royal Decree Law on urgent measures for the adaptation of Spanish Law to European Union regulations on data protection.

Results

Description of the sample

In 2016, 22 participating community pharmacists and SEFAC partners obtained a total of 355 tests with a correct pulse (16.2 per pharmacist). In 2017, 30 community pharmacists participated, offering the KYP campaign to 476 people. Of these, 434 (91.2%)

surveys were obtained with correct measures (14.5 per pharmacist). The participating pharmacies were located in all the autonomous regions of Spain, the Community of Valencia providing the most data (170 surveys, 39.2%).

The characteristics of the 434 people participating in the 2017 campaign, in terms of sex, age (50.2% were under the age of 65), heart rate, and previous diagnosis of AF are given in [table 1](#), which shows the differences to the previous diagnosis by gender.

The symptoms reported by the participants at the time of the 2017 interview are presented in [table 2](#). More than 79.5% did not present any symptoms associated with a possible AF: palpitations, shortness of breath, fatigue, chest pain or dizziness.

The condition reported by the highest percentage was hypertension with 41.9% of the participants in 2017 ([table 3](#)).

Table 1 Description of the sample from the 2017 campaign

Sex n (%)	Age m (SD)	Heart rate m (SD)	Previous diagnosis n (%)*
Women 274 (63.1)	64.0 (12.8)	70.0 (10.5)	11 (4.0)
Men 160 (36.9)	64.3 (13.0)	68.9 (12.3)	16 (10.0)
Total 434 (100.0)	64.1 (12.8)	69.6 (11.2)	27 (6.2)

* $P < 0.05$.

Table 2 Symptoms reported by participants in the 2017 interview

	Palpitations	Shortness of breath	Fatigue	Chest pain	Dizziness
YES	60 (13.8)	40 (9.2)	88 (20.3)	27 (6.2)	47 (10.9)
NO	364 (83.9)	390 (89.9)	345 (79.5)	404 (93.1)	386 (88.9)
NS (Doesn't know)	10 (2.3)	4 (0.9)	1 (0.2)	3 (0.7)	1 (0.2)
Total	434 (100.0)	434 (100.0)	434 (100.0)	434 (100.0)	434 (100.0)

Table 3 Illnesses reported by participants in the 2017 interview.

	HTN	CHF, LDV	PAD	NPT	DM	AMI
YES	182 (41.9)	14 (3.2)	34 (7.8)	4 (0.9)	55 (12.7)	13 (3.0)
NO	244 (56.3)	416 (95.9)	391 (90.1)	405 (93.3)	371 (85.5)	417 (96.1)
NS (Doesn't know)	8 (1.8)	4 (0.9)	9 (2.1)	25 (5.76)	8 (1.8)	4 (0.9)
Total	434 (100.0)	434 (100.0)	434 (100.0)	434 (100.0)	434 (100.0)	434 (100.0)

HTN: arterial hypertension. CHF: congestive heart failure. LDV: left ventricle dysfunction. PAD: peripheral arterial disease. NPT: non-pulmonary thromboembolism. DM: diabetes mellitus. AMI: acute myocardial infarction.



Use of medications

Regarding the use of medications of the 434 participants in the 2017 campaign, 51 (11.8%) were on dual antiplatelet therapy, while 20 (4.6%) were on anticoagulant treatment.

The most widely used therapeutic groups were: N02BA: 40 people (56.3%); B01AA: 14 (19.7%); B01AC: 10 (14.1%) (table 4).

CHA₂DS₂VASc score (Cardiac failure, hypertension, age, diabetes, stroke (doubled))

The number of patients with CHA₂DS₂VASc ≥ 2 was 255 (58.8%). Of these, 191 (75.0%) were on no treatment, 45 (17.6%) were on antiplatelet therapy, 18 (7.0%) anticoagulants and 1 (0.4%) antiarrhythmic drugs.

The number of patients with CHA₂DS₂VASc ≥ 2 and an irregular pulse was 17 (3.9%), of which 10 (58.8%) were on no treatment; 5 (29.4%) were on antiplatelet treatment and 2 (11.8%) anticoagulant treatment.

The patients ≥ 65 years had higher values of CHA₂DS₂VASc (3.18±1.38 vs 1.13±0.89 p<0.0001).

Comparative data from 2016 and 2017, pulse checks

In both years, more than 93% of the participants did not have a prior diagnosis of AF (95.5% in 2016 vs 93.8% in 2017) (table 5).

There were 41 participants with an irregular pulse detected (5.2%) in both campaigns. In the two years a total of 35 (8.1%) people were referred to a doctor. The means of contacting the primary care physician was: 25 (71.4%) by letter or report, 2 (5.7%) by telephone, 6 (17.1%) by email and 2 (17.1%) in person (table 6).

Discussion

Limitations

Over the course of the study some limitations were found, such as the difficulty of determining the existence or absence of a prior diagnosis of AF due to lack of access to the participant's medical records, a problem affecting research in community

Table 4 Medications used by the participants. Anatomical Therapeutic Chemical (ATC) Classification System

ATC	Medication	n (%)	n (%)
N02BA	Acetylsalicylic acid	35 (49.3)	40 (56.3)
	DL-lysine acetylsalicylate	5 (7.0)	
B01AC	Clopidogrel	7 (9.9)	10 (14.1)
	Triflusal	2 (2.8)	
	Acetylsalicylic acid + Clopidogrel	1 (1.4)	
B01AF	Rivaroxaban	2 (2.8)	5 (7.0)
	Apixaban	2 (2.8)	
	Edoxaban	1 (1.4)	
B01AE	Dabigatran	1 (1.4)	1 (1.4)
B01AA	Acenocumarol	14 (19.7)	14 (19.7)
C01BC	Flecainide	1 (1.4)	1 (1.4)
	Total	71 (100.0)	71 (100.0)

Table 5 Comparative table for 2016 and 2017 regarding the sample size, prior diagnosis and/or treatment with anticoagulants or antiplatelet drugs

	n	Prior diagnosis		Anticoagulant		Antiplatelet	
		NO	YES	NO	YES	NO	YES
2016	355	339 (95.5)	16 (4.5)	337 (94.9)	18 (5.1)	310 (87.3)	45 (12.7)
2017	434	407 (93.8)	27 (6.2)	413 (95.2)	21 (4.8)	384 (88.5)	50 (11.5)
Total	789	746 (96.5)	43 (3.5)	750 (95.1)	39 (4.9)	694 (87.7)	95 (12.3)

Table 6 Comparative table for 2016 and 2017 regarding the sample size, determination of an irregular pulse, referral to a doctor, diagnosis and treatment initiated following referral to a doctor

	n	Irregular pulse		Referral		Diagnosis		Treatment initiated	
		NO	YES	NO	YES	NO	YES	NO	YES
2016	355	336 (94.6)	19 (5.4)	341 (96.1)	14 (3.9)	352 (99.1)	3 (0.9)	352 (99.1)	3 (0.9)
2017	434	412 (95.4)	22 (5.1)	413 (95.2)	21 (4.8)	425 (97.9)	9 (2.1)	430 (99.1)	4 (0.9)
Total	789	748 (94.8)	41 (5.2)	754 (95.6)	35 (4.3)	777 (98.5)	12 (1.5)	766 (99.1)	7 (0.9)

pharmacies in general. For this reason pharmacological treatment information from electronic or paper prescriptions was used as the inclusion and exclusion criteria rather than a specialist's diagnosis.

Furthermore, there is no formal communication system between community pharmacists and primary care

doctors or specialists, so the clinical data obtained as a result of referral to a doctor and the evaluation come from the medical reports that the person brings, so some patients diagnosed through this study likely remain unrecorded.

Another possible limitation may be the undervaluation of the detection

of AF because it can occur intermittently, meaning taking the pulse at a particular moment for screening may not be enough.

Description of the sample

The ratio of patient/pharmacist participation was an average of 16-15 patients/pharmacist, depending on the year. This is considered an acceptable sample for the objectives set this being a pilot study. The "Know Your Pulse" campaign was conducted in five countries (Canada, New Zealand, Portugal, Spain and the United Kingdom), Spain being the second country with the most records of pulse checks (the first was Portugal with 850 pulse checks recorded in 2017) (19).

How the patient was selected was random, though as in all studies of this type, a minimum of selection bias cannot be ruled out. A poster announcing the campaign was used to elicit the interest of people who considered themselves possibly suffering from this pathology.

In both campaigns predominantly women participated (2017 campaign: 63.1% women). This sample represents the general population in regard to sex. According to the INE, the predominant sex in ages from 60 years upwards is female, which is 63.8% of the general population (20). However, 50.2% of participants in the 2017 campaign belonged to the 40 to 64 age group, people who do not frequently attend medical services, but do go to community pharmacies. According to the 2017 National Health Survey, 22.3% of people between the ages of 45 and 64 had not visited a primary care physician in the last year (21). For this reason, campaigns like this allow community pharmacists to effectively conduct screening and prevention strategies for all age groups, including those that do not tend to seek medical services, thereby contributing to the prevention of prevalent diseases, improving health and reducing health spending.

Detection and early diagnosis of AF is key to stroke prevention. Despite this, many patients are diagnosed with AF only after suffering a stroke (22). In Spain, according to the

AFABE study, 31% of the people with AF over 60 years of age did not have a previous diagnosis of this arrhythmia (23). Therefore, detecting AF can be challenging, as it often tends to be a silent disease and the first and only symptom to appear is stroke (22). Approximately 15-30% of people with AF are asymptomatic (24, 25). The most common symptoms are palpitations, shortness of breath, fatigue, chest pain and/or dizziness (24). A question about these symptoms was included in the 2017 campaign, and more than 79.5% of the respondents did not know or did not present any of them. However, no relationship was established between the presence of the symptoms and the new diagnoses of AF, but it was taken into account in subsequent campaigns. At the same time, the participants were informed about the importance of these symptoms as indicators of possible pulse irregularities.

Another question introduced in the 2017 questionnaire was whether they suffered from or were in treatment for any of the following diseases: HTN, CHF, LVD, acute pulmonary edema, non-pulmonary thromboembolism, DM, and AMI, among others. It was found that 41.9% of respondents were in treatment for hypertension, slightly less than another similar study (26), in which 54% (833) of patients had hypertension, though in this case the median age was higher at 72.5 years. These pathologies, along with age, are risk factors for AF. Early diagnosis and treatment help to reduce the presentation of this arrhythmia (3, 27). One of the modifications that will be made in subsequent campaigns in Spain will be recording blood pressure at the time of the study, as good control of this is part of prevention and treatment of AF (3).

CHA₂DS₂ VASc scale and use of medications

The main objective in the prevention of AF-associated stroke should be early detection of arrhythmia and individual assessments of the risk of stroke for each patient using tools such as the CHA₂DS₂ VASc score. This

risk scale was included in the European Society of Cardiology (ESC) 2010 guidelines, which was expanded from the standard CHA₂DS₂. Additional vascular factors are: age between 65 and 74, being female and vascular disease (28). However, this tool only measures the risk of stroke in patients diagnosed with AF and thus it simplifies the decision of whether to start antithrombotic therapy. This is an AI recommendation, from the ESC 2010 guidelines, in predicting stroke in patients with atrial fibrillation (AF) (3,29,30).

In the present study this questionnaire was given to all participants, with the aim of going beyond measuring the risk of stroke in people with an irregular pulse. It was used as an educational measure to explain the importance of treating and/or preventing certain diseases included as risk factors in the scale. Of the total sample, 38.8% of the participants had CHA₂DS₂ VASc \geq 2. A person with this value and diagnosed with AF was recommended to initiate antithrombotic treatment because it means an annual risk of 2.2% or a higher for embolic stroke (3). In addition, 3.9% of people were detected to have CHA₂DS₂ VASc \geq 2 and an irregular pulse, of which 58.8% had no treatment and were referred to a doctor to confirm the diagnosis and commence the pharmacological treatment. The STROKESTOP study conducted in 2015, using the CHA₂DS₂ VASc tool, established that 5.1% of the population screened had AF without treatment (31). This figure is not much higher than that obtained in our study despite the limitation of not having all the results from referrals to doctors.

To date we have not found any studies similar to ours in community pharmacies in the literature, with the use of this scale and similar methodology which would allow us to compare the data obtained in greater depth.

Comparative data from 2016 and 2017, pulse checks

The ESC 2016 Guidelines recommend opportunistic pulse checks in

people over the age of 65 and an electrocardiogram to confirm AF (3). In addition, the ESC included those at high risk of stroke even if under age 65 year in this recommendation. However, recent studies maintain that pulse taking is concordant with electrocardiographic diagnosis between 84.9 and 91.6% (32).

Nevertheless, this is not usual practice. In Spain, only 12% of primary care doctors perform this check on a routine basis, which is similar to most countries in Europe (1,33). A recent study of a sample of individuals (58.6% women) with an average age of 74 in primary care in Spain, found that 4.3% of people who had an irregular pulse, were diagnosed as new cases of AF (34). In our 2017 study an irregular pulse was detected in 5.1% of cases, 2.1% of which were diagnosed by a doctor, despite the fact that the return was not total. In both cases the data was slightly lower than that obtained in a Swedish old age population (75–76 years) in which it was found that 3% had unknown AF (33).

The considerable number of patients with an irregular pulse detected and suspected of undiagnosed AF without treatment which, as a result of the KYP project, were referred to a doctor, made it possible to establish a diagnosis and initiate appropriate therapy, which represents an important contribution to preventing this pathology and its consequences.

The prevalence of an irregular pulse and possible cases of AF detected is similar to that obtained in similar studies in the primary care sphere, which, together with the validity of the methodology and procedure carried out, demonstrates the ability and usefulness of the pharmacist in the community pharmacy to screen for irregular pulses, and reaffirms its key role as an accessible and efficient part of our health care system.

Acknowledgments

To all the community pharmacists participating in the study: Andrés

Rodríguez NF; Baixauli Fernández VJ; Castelló Alberola MD; Climent Catalá MT; Corona Colldeforn M; Edelmira Córcoles M; Escudero Rivera I; Fernández Cordeiro M; Fornos Pérez JA; García Espona JL; García Rodríguez P; García Salgado PF; García Zaragoza E; Iracheta Todó M; López Gallego M; Martínez Pérez S; Méndez Mora Figueroa MP; Mera Gallego I; Mera Gallego R; Monllor Córcoles B; Mora Ortiz de Apodaca P; Mud Castello F; Mud Castello S, Murillo Fernández Vega MD; Penín Álvarez O; Perseguer Torregrosa Z; Plaza Zamora FJ; Pons Thomas B, Prats Mas R; Rodríguez Moncho MJ; Signes Mut A; Tous Trepat S; Villasuso Cores N.

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Every **15 seconds**, someone has a stroke due to atrial fibrillation (**AF**)

- Detect** AF with a simple pulse check
- Protect yourself** against AF-related stroke using an anticoagulant (aspirin)
- Correct** Correct AF speak to your doctor to discuss therapy and treatment options



info@afa-international.org



Nota de pie de página* Basado en datos de incidencia global de AVC en evidencia publicados sobre la proporción de AVC isquémicos resultante de FA.
© AF Association 2015



Figure 1.1 Campaign poster

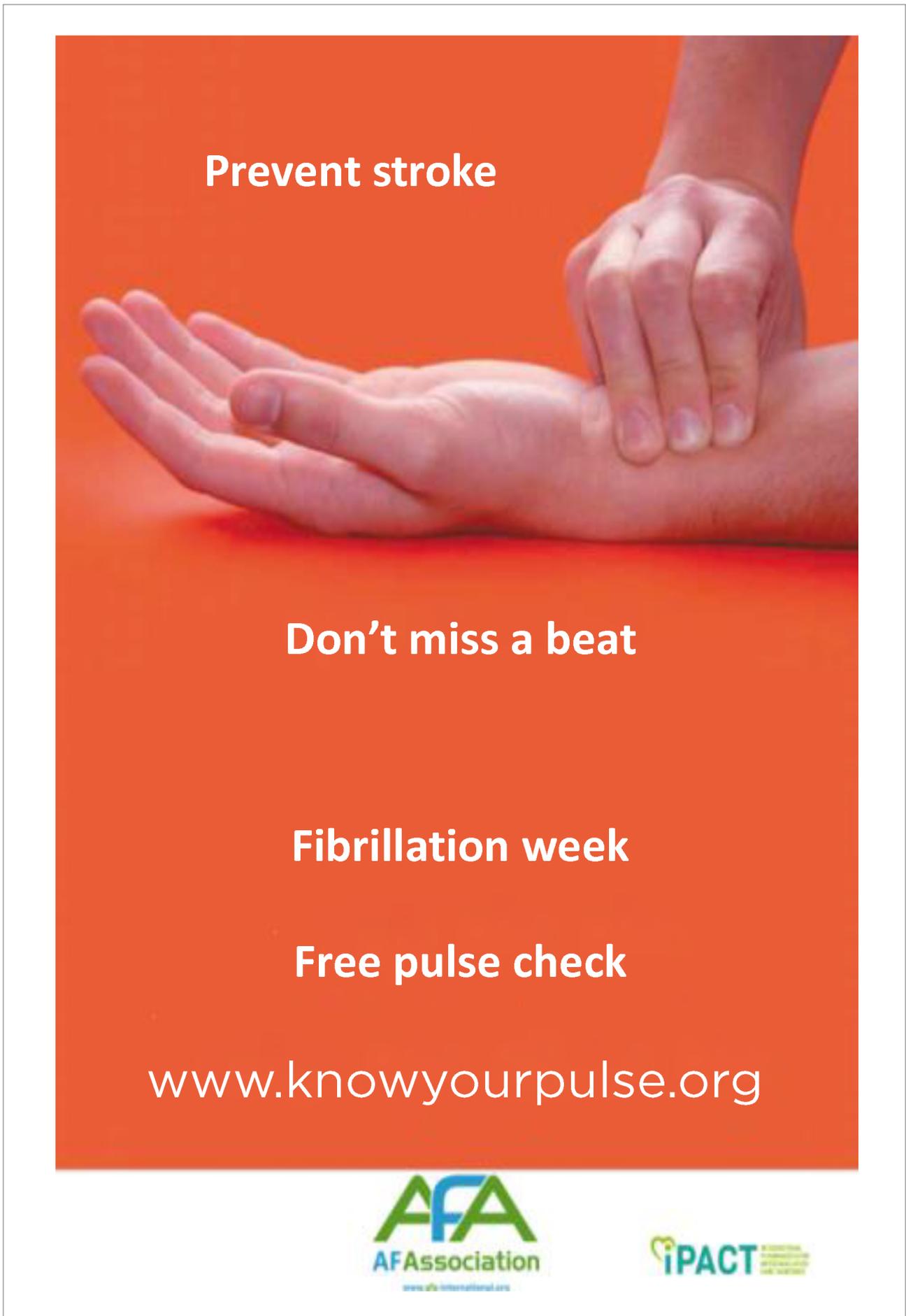


Figure 1.2 Campaign poster

Know Your Pulse



What is your pulse?

Your pulse is:

- ♥ Your heart beat
- ♥ Your heart rate
- ♥ Your heart rhythm

One of the easiest places to feel your pulse is on your wrist, just below your thumb. You can feel your pulse in other areas of your body, including the crease of your elbow, in your groin or behind your knee.

Why should you check your pulse?

Being aware of your pulse is important because it may indicate an arrhythmia (heart rhythm disorder).

Discovering an abnormal heart rate or rhythm early can ensure you receive accurate diagnosis, and appropriate treatment/therapy from your doctor to help better manage these conditions and their consequences.

When should you check your pulse?

It is a good idea to try taking your pulse at various points throughout the day (before and after various activities). Your pulse rate will change during the day depending on what activity you are doing. This is normal. To get your baseline pulse and normal rhythm, try taking your resting pulse when you wake in the morning and before going to bed.

What is a normal pulse?

A normal (resting) rate is between 60 and 100 beats per minute. A normal rhythm has an even gap between beats (ticks like a clock). However, there are normal reasons why your pulse may be slower or faster. This may be due to your age, medications, caffeine, level of fitness, any other illness including heart conditions, stress and anxiety.

When should you seek further advice?

- ♥ If your pulse seems to be racing some or most of the time and you are feeling unwell.
- ♥ If your pulse seems to be slow some or most of the time and you are feeling unwell.
- ♥ If your pulse feels irregular ('jumping around'), even if you do not feel unwell.

Everyone is different and it is difficult to give precise guidelines. Certainly many people may have pulse rates over 100 beats/min (bpm) and less than 60 bpm. Irregularity is quite difficult to assess since the normal pulse is a bit irregular, varying with the phase of respiration. You should see your doctor if you have a persistent heart rate above 120 bpm or below 40 bpm and/or if the rhythm is irregular, too fast, too slow.



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Published April 2009, Reviewed January 2017



Please remember these are general guidelines and individuals should always discuss their condition with their own doctor

Figure 2.1 Information brochure pulse check guide

Know Your Pulse in four steps

1

To assess your **resting** pulse rate in your wrist, sit down for **5 minutes** beforehand. Remember that any stimulants taken before the reading will affect the rate (such as caffeine or nicotine). You will need a watch or clock with a second hand.



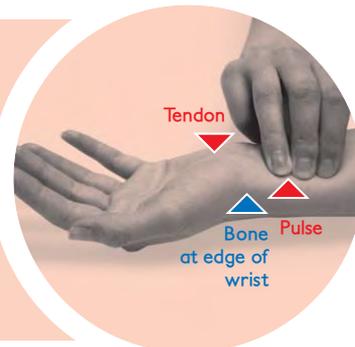
2

Take off your watch and hold your left or right hand out with your palm facing up and your elbow slightly bent.



3

With your other hand, place your index and middle fingers on your wrist, at the base of your thumb. Your fingers should sit between the bone on the edge of your wrist and the stringy tendon attached to your thumb (as shown in the image). You may need to move your fingers around a little to find the pulse. Keep firm pressure on your wrist with your fingers in order to feel your pulse.



4

Count for **30 seconds**, and multiply by 2 to get your heart rate in beats per minute.

If your heart rhythm is irregular, you should count for **1 minute** and do not multiply.



Record your pulse here

Day	Result		Activity (e.g after a run)
	am	pm	
1			
2			
3			
4			
5			
6			
7			

Figure 2.1 Information brochure pulse check guide



Pharmacy _____

Code Date of birth:/...../..... Sex M F

1 - Are you experiencing any of these symptoms?

	Yes	No	When (date)		Yes	No	When (date)
Irregular pulse	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Rapid pulse	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Shortness of breath	Yes <input type="checkbox"/>	No <input type="checkbox"/>	At rest	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Palpitations	Yes <input type="checkbox"/>	No <input type="checkbox"/>	During exercise	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Chest pain	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Fatigue	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Palpitations	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Swollen ankles	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Palpitations for more than 15 seconds					Yes <input type="checkbox"/>	No <input type="checkbox"/>

2- Have you had any of these problems or treatments?

	Yes	When (date)		Yes	No	When (date)	
Myocardial infarction	Yes <input type="checkbox"/>	No <input type="checkbox"/>	High blood pressure	Yes <input type="checkbox"/>	No <input type="checkbox"/>
TIA* (Transient ischemic attack)	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Thyroid problems	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Ablation treatment	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Heart failure	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Vascular disease / artery problems	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Heart surgery	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Pacemaker implanted	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Electrical cardioversion	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Implantation of an IAD (implantable automatic defibrillator)					Yes <input type="checkbox"/>	No <input type="checkbox"/>

3- Have you received a definitive diagnosis of:

	Yes	No	Since when
Atrial fibrillation	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Atrial flutter	Yes <input type="checkbox"/>	No <input type="checkbox"/>

4- Does your heart rhythm problem...

	Yes	No	Since when
Occur as attacks?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Is it present all the time?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

5- Are you currently, or have you ever been treated with any of these medications?

	Yes	No	Since when
Amiodarone	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Apixaban	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Aspirin	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Beta blockers	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Calcium antagonists (diltiazem, verapamil)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Figure 4.1 "2017 Know your pulse" campaign questionnaire







Clopidogrel	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Digoxin	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Dronedaron	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Dabigatran (Pradax)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Edoxaban (Lixiana)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Flecainide	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Propafenone	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Rivaroxaban (Xarelto)	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Sotalol	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Verapamil	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Warfarin	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Statins	Yes <input type="checkbox"/> No <input type="checkbox"/>	
Vitamin supplements / alternative remedies	Yes <input type="checkbox"/> No <input type="checkbox"/>	

6-Have you seen any other doctor to treat this problem?

	Yes	No	Since when
GP / General practitioner (family doctor)	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Emergency doctor	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Hospital doctor	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Cardiologist	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Electrophysiologist /	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Nurse specializing in arrhythmia	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

7-Have you had any of the following tests? If you have any results at home, please take them to your doctor.

	Yes	No	Since when
Resting ECG	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Exercise ECG	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Implantation of ECG monitor 24hr, 48hr, 7 days, 14 days	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Echo heart scanner	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Analysis of thyroid function	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Other blood tests:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

8-Do you have a copy of your ECG? If you do, please take it to your doctor

	Yes	No	Since when
When the rhythm is normal	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
When the rhythm is abnormal	Yes <input type="checkbox"/>	No <input type="checkbox"/>	

Figure 4.1 "2017 Know your pulse" campaign questionnaire

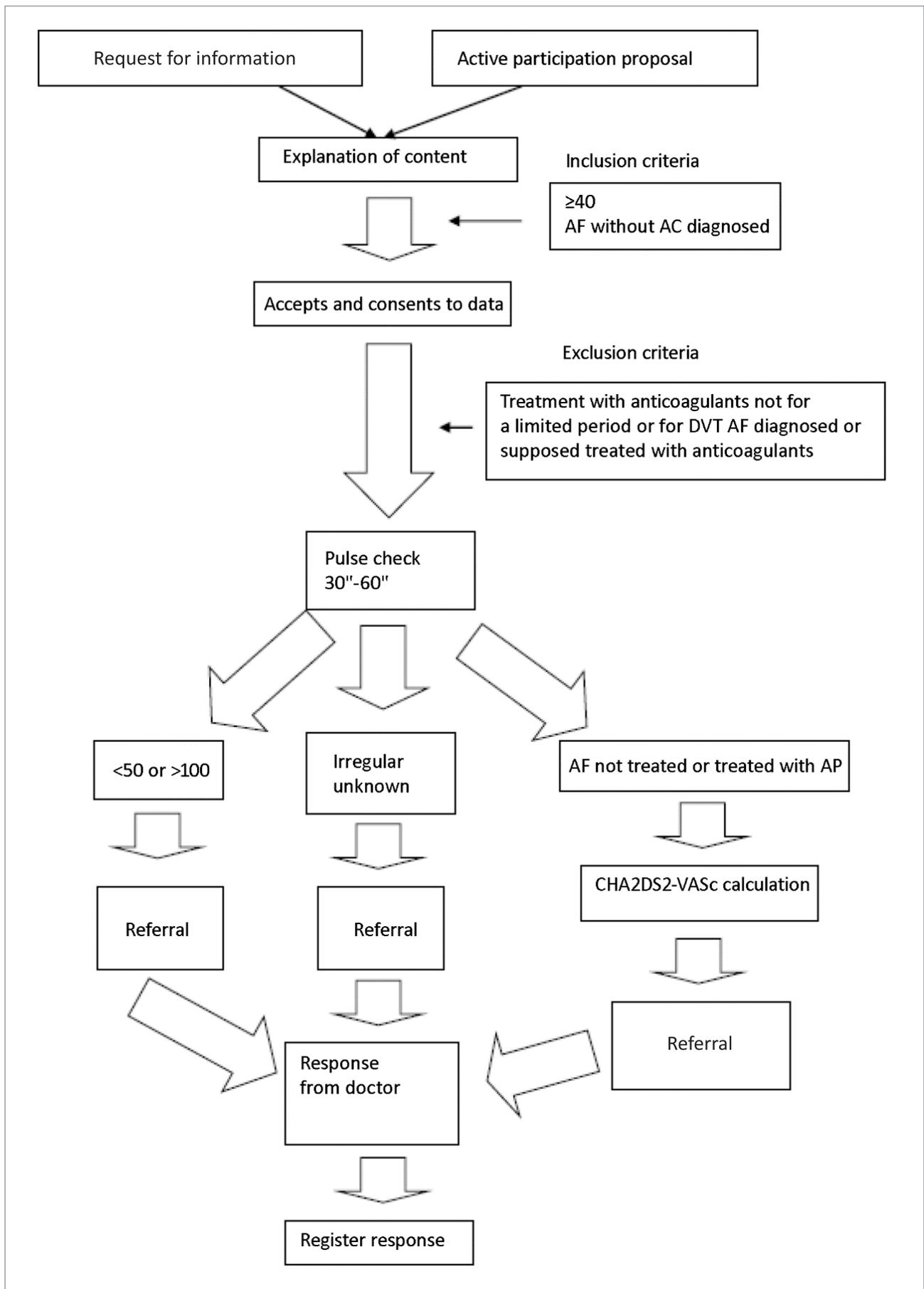


Figure 5 General algorithm for the "Know your pulse 2016 and 2017" campaigns