Device detected AF and atrial high rate episodes

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Atrial fibrillation

2-3% of the UK population suffer from AF
AF management requires 1-3% of the entire NHS resources
Premature cardiovascular deaths
Every 4th stroke (or more)
Frequent hospitalizations
Morbidity, lost autonomy, reduced quality of life

Heart failure and sudden death are common even on optimal management
The Five Domains of AF Management

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Desired outcome</th>
<th>Patient benefit</th>
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</thead>
<tbody>
<tr>
<td>Acute rate and rhythm control</td>
<td>Haemodynamic stability</td>
<td>Improved life expectancy</td>
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<tr>
<td>Manage precipitating factors</td>
<td>Cardiovascular risk reduction</td>
<td>Improved quality of life, autonomy,</td>
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<tr>
<td>Assess stroke risk</td>
<td>Stroke prevention</td>
<td>social functioning</td>
</tr>
<tr>
<td>Assess heart rate</td>
<td>Symptom improvement, preservation of</td>
<td></td>
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<td></td>
<td>LV function</td>
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<tr>
<td>Assess symptoms</td>
<td>Symptom improvement</td>
<td></td>
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<td>Antiarhythmic drugs, cardioversion, catheter ablation, AF surgery</td>
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<td>Rate control therapy</td>
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<td>Oral anticoagulation in patients at risk for stroke</td>
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<tr>
<td>Lifestyle changes, treatment of underlying cardiovascular conditions</td>
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</table>

To support integrated AF care, the ESC Guidelines task force and the CATCH ME consortium (www.catch-me.info) have developed state-of-the-art interactive tools underpinning integrated AF management. A first version including an overall treatment manager is integrated into the AF section of the ESC pocket guidelines app. Further CATCH ME tools for healthcare professionals and an associated app for AF patients will be released in late 2016 / early 2017. CATCH ME is supported by the European Union grant agreement No 633196 [CATCH ME].
Revolutionise Your Clinical Decision - Making for AFib Patients

Download the ESC Pocket Guidelines App to access:

2016 ESC Clinical Practice Guidelines on AFib

Exciting new tools from CATCH ME* to personalise prevention and management of your AFib patients

* Funded by the European Union’s Horizon 2020 research and innovation programme under grant agreement No 633196
http://www.catch-me.info/
Stroke prevention in atrial fibrillation

Mechanical heart valves or moderate or severe mitral stenosis

Estimate stroke risk based on number of CHA$_2$DS$_2$-VASc risk factors

0$^a$
- No antiplatelet or anticoagulant treatment (IIIB)

1
- OAC should be considered (IIaB)

≥2
- Oral anticoagulation indicated
  - Assess for contra-indications
  - Correct reversible bleeding risk factors

LAA occluding devices may be considered in patients with clear contra-indications for OAC (IIbC)

NOAC (IA)$^b$
VKA (IA)$^c$

$^a$ Includes women without other stroke risk factors
$^b$ IIaB for women with only one additional stroke risk factor
$^c$ IB for patients with mechanical heart valves or mitral stenosis
The 2016 ESC AF guidelines in 17 bullet points

Here, we provide 17 simple rules to guide diagnosis and management of AF patients according to the 2016 ESC/EACTS/ESO Guidelines for the management of atrial fibrillation:

1. Use ECG screening in at risk populations for atrial fibrillation, especially stroke survivors and the Elderly.
Silent AF in stroke survivors: IDEAS

1135 survivors of a stroke (69 years, 55% men, 27% TIA) in 9 certified stroke units in Germany. 5% had AF on admission to stroke unit (simple ECG).

72 hour Holter Monitoring immediately after the stroke

4.3% detection of unknown AF (49/1135 patients)

No difference in AF detection rate by stroke “etiology” (TOAST; clinical)

Silent, undiagnosed AF is a common cause of ischemic stroke

5% of patients presenting with an acute stroke have previously undiagnosed AF on admission (detected by ECG).

ECG monitoring identifies AF in stroke survivors:
~ 10% of unselected stroke patients
~ 30% of “cryptogenic stroke” patients

ECG detection of AF prior to the first stroke is highly desirable.

AHRE and stroke

2580 pacemaker patients over 65 years with hypertension (CHADS$_2$VA$_2$Sc ≥ 2) without known AF; 3 months monitoring for AHRE (subclinical AT) by pacemaker monitoring.
Stroke risk in patients with AHRE

<table>
<thead>
<tr>
<th>Trial</th>
<th>Study type and duration</th>
<th>Study population</th>
<th>Criteria for the diagnosis of AHRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOST29</td>
<td>Subgroup analysis of RCT, 6 years</td>
<td><em>n</em> = 312, median age 74 years, 55% female, and 60% had a history of SND</td>
<td>Atrial rate &gt; 220 bpm for 10 consecutive beats</td>
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<tr>
<td>TREND530</td>
<td>Prospective observational study, mean follow-up 1.4 years</td>
<td><em>n</em> = 2486 with ≥ 1 risk factor for stroke</td>
<td>AT/AF burden = longest total AT/AF duration on any given day during the prior 30-day period and classified as subsets: zero, low (&lt;5.5 h [median duration]), and high (≥ 5.5 h)</td>
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<tr>
<td>ASSERT31</td>
<td>Prospective observational study, mean follow-up 2.5 years</td>
<td><em>n</em> = 2580, age ≥ 65 years, with hypertension and no history of AF</td>
<td>Atrial rate &gt; 190 bpm for &gt; 6 min</td>
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<tr>
<td>Carelink/VA34</td>
<td>Case crossover study, analysis of data 30 days preceding a stroke</td>
<td><em>n</em> = 9850, median age 68 years, 99% male, and 98% had a defibrillator</td>
<td>≥ 5.5 h of AF on ≥ 1 day in the preceding 30 days</td>
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<tr>
<td>Belgrade Atrial Fibrillation Study35</td>
<td>Single-centre registry study and mean follow-up 9.9 ± 6.1 years</td>
<td><em>n</em> = 1100, mean age 52.7 ± 12.2 years, 13.3% had asymptomatic AF</td>
<td>Asymptomatic presentation of first diagnosed AF</td>
</tr>
<tr>
<td>SOS AF project36</td>
<td>Pooled analysis of individual patient data from five prospective studies</td>
<td><em>n</em> = 10 016, median age 70 years. Pts without permanent AF with ICDs were included if they had at least 3 months of follow-up</td>
<td>Device-detected AF. Cutoff points of AF burden defined as: 5 min, 1, 6, 12, and 23 h</td>
</tr>
</tbody>
</table>

HR 2.8 for death or stroke

HR 0.98 (<5.5 AHRE hours/30 days)
HR 2.2 (>5.5 AHRE hours/30 days)

HR 2.49 (so far no „burden“ analysis)

HR 4 for times with AHRE vs times without

No risk increase for short AHRE
HR 2.1 for >1 ARHE hour

modified from Camm AJ et al Europace, published on line 4 Oct16
Timing of AHRE and ischemic stroke / TIA

11/29 without AHRE before stroke

13/24 without AHRE before stroke

A further 8 patients did not have AHRE either one year before or after the event

Etiology of ischemic stroke

- Artery occlusion
  - 20% cardioembolic
  - 15% lacunar
  - 5-10% infrequent
  - 25% cryptogenic
Anticoagulation in patients with AHRE: IMPACT

Enrolment and Randomization

Intervention
Home monitoring fully enabled
Protocol defined anticoagulation

Start Anticoagulation
AT in two consecutive days for
CHADS\(_2\) 1 or 2: ≥48 h
CHADS\(_2\) 3 or 4: ≥24 h

Continuous monitoring for atrial arrhythmias using home monitoring

Re-detect AT
CHADS\(_2\) 1, 2, 3, or 4: any duration of AT

Continuous monitoring for atrial arrhythmias using home monitoring

Control
Home monitoring for safety only
Physician-directed anticoagulation

Start and maintain anticoagulation
CHADS\(_2\) 5 or 6 or prior thromboembolism: any duration of AT

Free of AT
Consecutive days for
CHADS\(_2\) 1 or 2: >30 days
CHADS\(_2\) 3 or 4: >90 days

Stop anticoagulation

Yes

No

Yes

Restart anticoagulation

Anticoagulation in patients with AHRE: IMPACT

2718 pacemaker patients with AHRE (median CHADSVASC score 4) randomized to no anticoagulation (usual care) or anticoagulation initiated at times of AHRE and continued for 30 days / 90 days after last AHRE (depending on CHADS).

Outcomes:
22 strokes, 41 major bleeds

OAC vs usual care
Stroke 0.7 vs 1.3%
Bleed 1.6 vs 1.2%
Death 5.4 vs 5.1 %
AHRE and stroke prevention:

**ASSERT**
Stroke risk in patients with AHRE is lower than in patients with “overt” AF. Half of strokes occurred *before* the first detected AHRE.

**ASSERT, IMPACT, observational data sets**
Strokes in device patients rarely happen in the days after AHRE events.

**EXPECT-AF**
20% of AHRE episodes are artefacts or other atrial arrhythmias

**IMPACT**
Anticoagulation around the time of AHRE episodes does not modify stroke rate compared to no anticoagulation in patients with AHRE.

AHRE and stroke prevention: We need more data.

The pathological and prognostic significance of AHRE has not been fully established. There is a need to identify and validate further markers of risk in patients with AHRE. Finally, the use of oral anticoagulation for stroke prevention in patients with AHRE must be evaluated. Given the risks and inconvenience of OAC therapy, there are currently insufficient data to support their routine use in patients with AHRE, but no clinically detected AF.
Current uncertainties relating to the detection of AHRE and to the management of patients with AHRE

1. Patients with AHRE (but without diagnosed AF) have an increased risk of future stroke compared to patients without AHRE.

2. Short AHRE episodes (e.g. shorter than 5 minutes) are prone to be artefacts.

3. The prognostic impact (e.g. increase in stroke risk) of rare and short bouts of atrial fibrillation is probably lower than that of ECG-diagnosed atrial fibrillation.

4. Some “atrial high rate episodes” reflect other atrial arrhythmias not necessarily requiring stroke prevention therapy.

5. The timing of AHRE is not related to stroke in patients with AHRE.

6. One study did not find an effect of intermittent anticoagulation at the time of AHRE and a few weeks afterwards compared to no anticoagulation.

There is equipoise for oral anticoagulation in AHRE patients.
Management of atrial high rate episodes detected by an implanted device

Patient without known AF presenting with atrial high rate episode (AHRE, >5-6 min and >180 bpm) detected by an implanted device

Assess eligibility for oral anticoagulation using CHA₂DS₂-VASc score

Verify presence of AF by ECG documentation
- e.g. resting ECG
- Ambulatory ECG recorder
- Patient-operated devices

Review device electrograms (if available) to determine whether it is AF

No AF detected

AF detected

Consider patient characteristics (e.g. stroke risk score) and patient preference

No antithrombotic therapy (IB)

Initiate oral anticoagulation (IA)
Patients at risk for cardiovascular events (Age 65 years or more and one additional CHA₂DS₂VASc factor) and documented atrial high rate episode by implanted device

Main exclusion criteria
conventionally diagnosed AF indication for oral anticoagulation contraindication for NOAC therapy

Randomisation

NOAC therapy (edoxaban)

No oral anticoagulation (acetylsalicylic acid or placebo)

Double-blind, double dummy therapy outpatient follow-up for events

https://clinicaltrials.gov/ct2/show/NCT02618577?term=NOAH&rank=1, NCT02618577

A similar trial (ARTESiA, NCT01938248) is performed in Canada, US, and Europe
Document AF before initiating therapy in patients with device detected atrial high rate episodes

Thank you