10. Atriyal Fibrilasyon Zirvesi 2021
11-13 Kasım 2021 • Calista Kongre Merkezi Antalya

# SON ATRİYAL FİBRİLASYON KILAVUZUNDAKİ YENİLİKLER - TANI

Dr. Serkan Yüksel
Ondokuz Mayıs Üniversitesi
Tıp Fakültesi
Kardiyoloji A.D.
Samsun

ESC European Society of Cardiology
European Heart Journal (2020) **42**, 373–498
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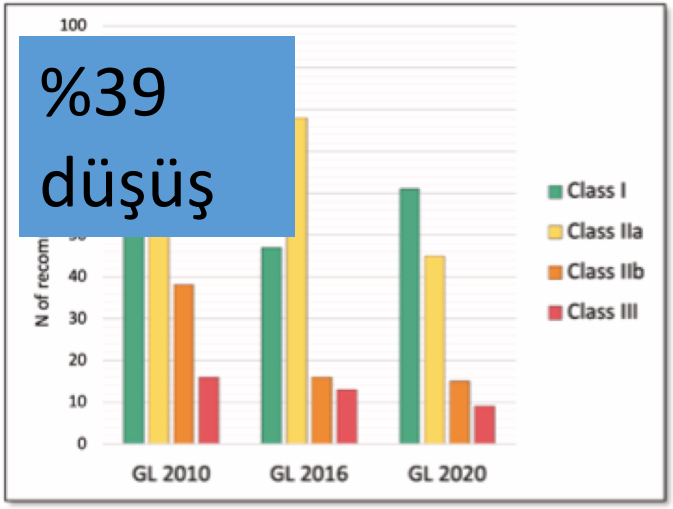
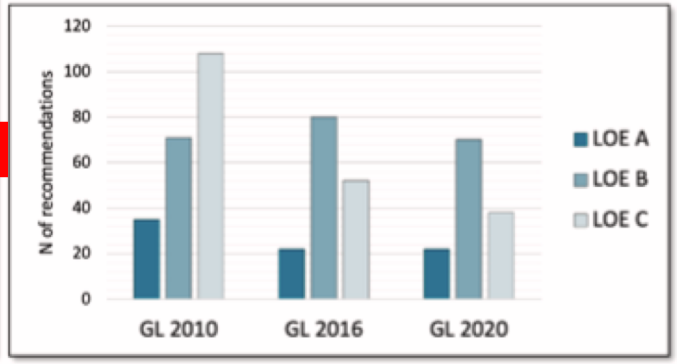
# 2020 ESC Guidelines for the diagnosis and

| | AF GUIDELINES 2010 | AF GUIDELINES 2016 | AF GUIDELINES 2020 |
|---|---|---|---|
| NUMBERS OF RECOMMENDATIONS | 214 | 154 | 130 |
| CLASS OF RECOMMENDATIONS | | | |
| I | 41% | 31% | 47% |
| IIa | 34% | 51% | 35% |
| IIb | 18% | 10% | 11% |
| III | 7% | 8% | 7% |
| LEVELS OF EVIDENCE (LOE) | | | |
| A | 16% | 14% | 17% |
| B | 33% | 52% | 54% |
| C | 51% | 34% | 29% |
| STRONG EVIDENCE-BASED RECOMMENDATIONS | | | |
| LOE A for Class I (% of total Class I) | 26% | 30% | 30% |

%39 düşüş



# AF- Tanım

| | Definition |
|---|---|
| **AF** | A supraventricular tachyarrhythmia with uncoordinated atrial electrical activation and consequently ineffective atrial contraction.<br>*Electrocardiographic characteristics of AF include:*<br>• Irregularly irregular R-R intervals (when atrioventricular conduction is not impaired),<br>• Absence of distinct repeating P waves, and<br>• Irregular atrial activations. |
| | **Currently used terms** |
| **Clinical AF** | *Symptomatic* or *asymptomatic* AF that is documented by surface ECG.<br>The minimum duration of an ECG tracing of AF required to establish the diagnosis of clinical AF is at least 30 seconds, or entire 12-lead ECG.[1,2] |
| **AHRE, subclinical AF** | Refers to individuals *without symptoms attributable to AF,* in whom *clinical AF is NOT previously detected (that is, there is no surface ECG tracing of AF)*, see also *section 3.3*.<br>**AHRE** - events fulfilling programmed or specified criteria for AHRE that are detected by CIEDs with an atrial lead allowing automated continuous monitoring of atrial rhythm and tracings storage. CIED-recorded AHRE need to be visually inspected because some AHRE may be electrical artefacts/false positives.<br>**Subclinical AF** includes AHRE confirmed to be AF, AFL, or an AT, or AF episodes detected by insertable cardiac monitor or wearable monitor and confirmed by visually reviewed intracardiac electrograms or ECG-recorded rhythm. |

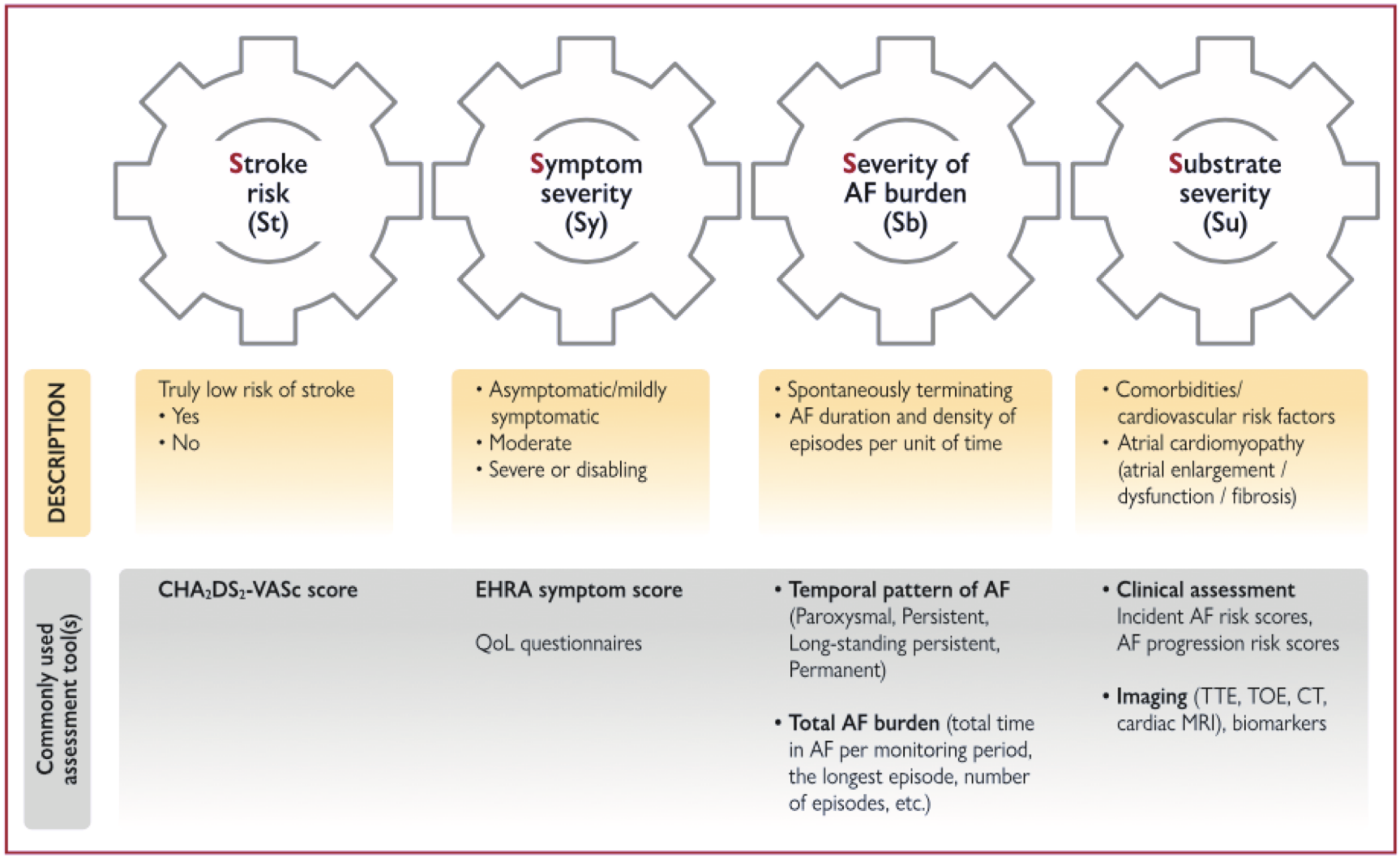
# Klinik Atrial Fibrilasyon – Tanı Kriteri

| Recommendations | Class[a] | Level[b] |
|---|---|---|
| ECG documentation is required to establish the diagnosis of AF.<br>• A standard 12-lead ECG recording or a single-lead ECG tracing of ≥30 s showing heart rhythm with no discernible repeating P waves and irregular RR intervals (when atrioventricular conduction is not impaired) is diagnostic of clinical AF.[6] | I | B |

# Atriyal Fibrilasyon – Sınıflandırma

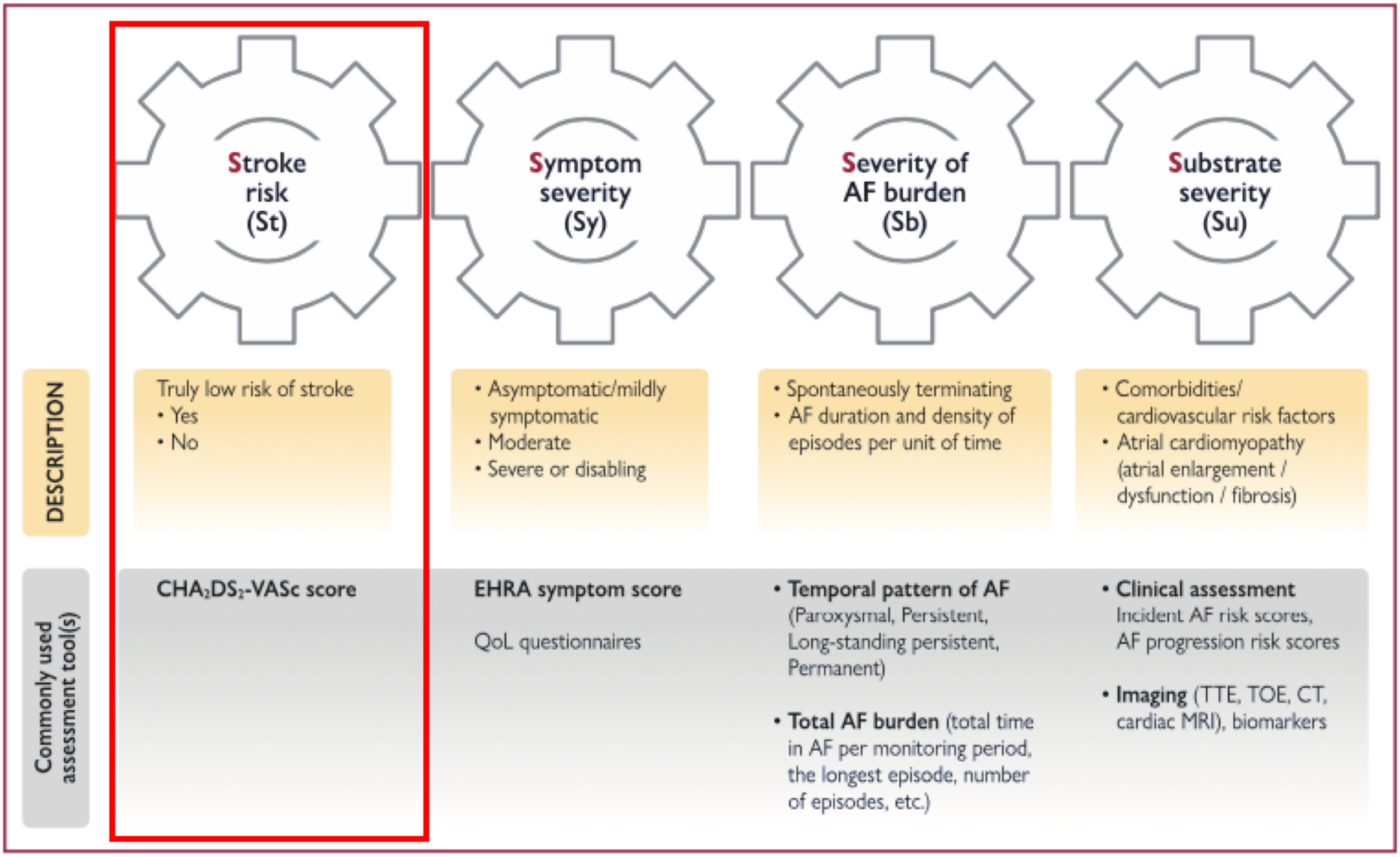
| AF pattern | Definition |
|---|---|
| **First diagnosed** | AF not diagnosed before, irrespective of its duration or the presence/severity of AF-related symptoms. |
| **Paroxysmal** | AF that terminates spontaneously or with intervention within 7 days of onset. |
| **Persistent** | AF that is continuously sustained beyond 7 days, including episodes terminated by cardioversion (drugs or electrical cardioversion) after ≥7 days |
| **Long-standing persistent** | Continuous AF of >12 months' duration when decided to adopt a rhythm control strategy. |
| **Permanent** | AF that is accepted by the patient and physician, and no further attempts to restore/maintain sinus rhythm will be undertaken. Permanent AF represents a therapeutic attitude of the patient and physician rather than an inherent pathophysiological attribute of AF, and the term should not be used in the context of a rhythm control strategy with antiarrhythmic drug therapy or AF ablation. Should a rhythm control strategy be adopted, the arrhythmia would be re-classified as 'long-standing persistent AF'. |
| **Terminology that should be abandoned** | |
| **Lone AF** | A historical descriptor. Increasing knowledge about the pathophysiology of AF shows that in every patient a cause is present. Hence, this term is potentially confusing and should be abandoned.[147] |
| **Valvular/non-valvular AF** | Differentiates patients with moderate/severe mitral stenosis and those with mechanical prosthetic heart valve(s) from other patients with AF, but may be confusing[148] and should not be used. |
| **Chronic AF** | Has variable definitions and should not be used to describe populations of AF patients. |

# Sınıflandırmadan – Yapılandırılmış AF Nitelemesine Geçiş



# Yapılandırılmış AF Nitelemesi

| Recommendations | Class[a] | Level[b] |
|---|---|---|
| Structured characterization of AF, which includes clinical assessment of stroke risk, symptom status, burden of AF, and evaluation of substrate, should be considered in all AF patients, to streamline the assessment of AF patients at different healthcare levels, inform treatment decision-making, and facilitate optimal management of AF patients.[151] | IIa | C |

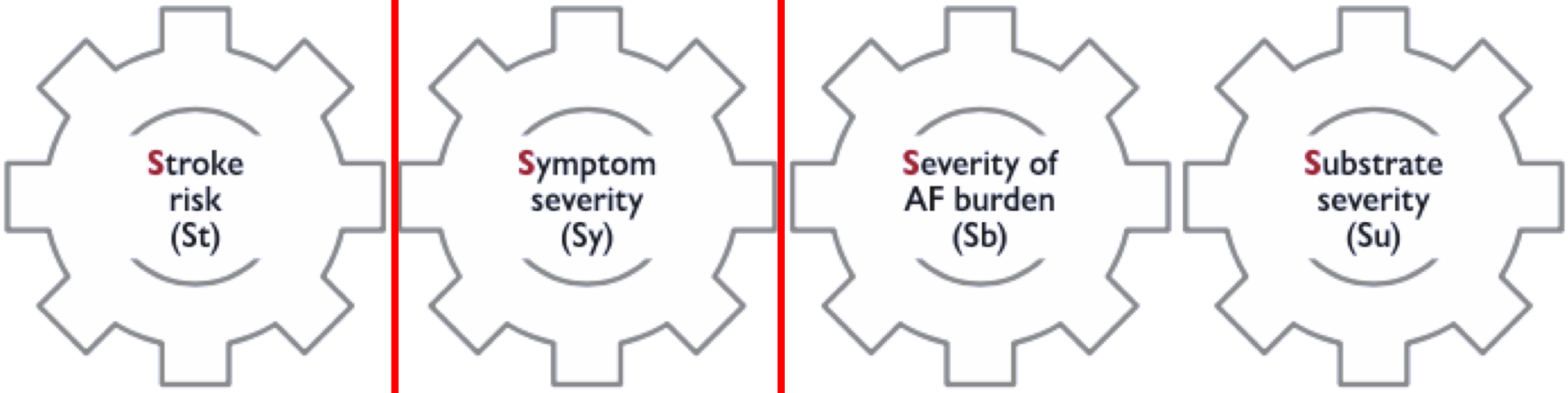

Stroke risk (St)
Symptom severity (Sy)
Severity of AF burden (Sb)
Substrate severity (Su)
DESCRIPTION
Truly low risk of stroke
• Yes
• No
• Asymptomatic/mildly symptomatic
• Moderate
• Severe or disabling
• Spontaneously terminating
• AF duration and density of episodes per unit of time
• Comorbidities/ cardiovascular risk factors
• Atrial cardiomyopathy (atrial enlargement / dysfunction / fibrosis)
Commonly used assessment tool(s)
CHA2DS2-VASc score
EHRA symptom score
QoL questionnaires
• Temporal pattern of AF (Paroxysmal, Persistent, Long-standing persistent, Permanent)
• Total AF burden (total time in AF per monitoring period, the longest episode, number of episodes, etc.)
• Clinical assessment Incident AF risk scores, AF progression risk scores
• Imaging (TTE, TOE, CT, cardiac MRI), biomarkers

# $CHA_2DS_2$-VASC Risk Skorlaması

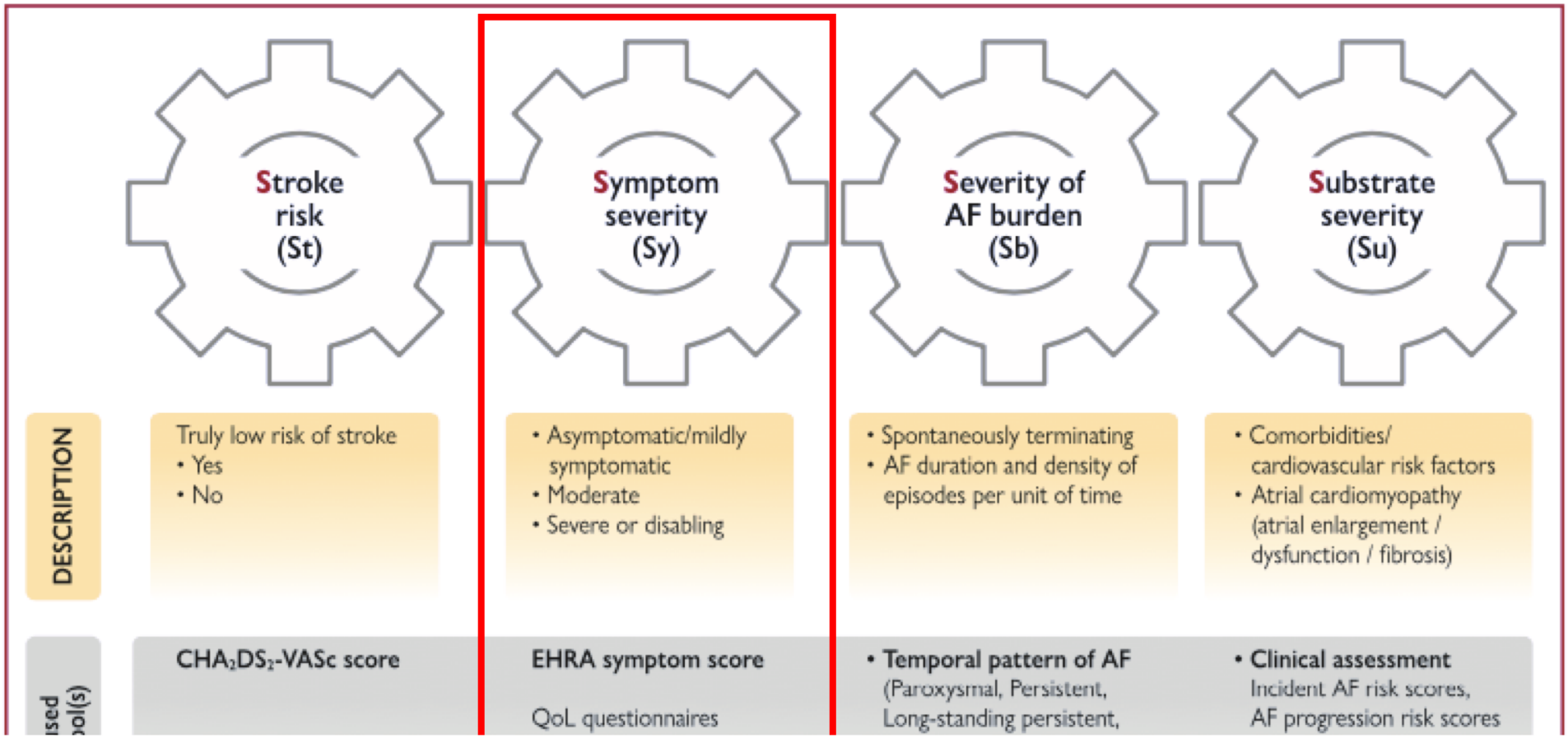
| $CHA_2DS_2$-VASc score<br>Risk factors and definitions | | Points awarded | Comment |
|---|---|---|---|
| C | **Congestive heart failure**<br>Clinical HF, or objective evidence of moderate to severe LV dysfunction, or HCM | 1 | Recent decompensated HF irrespective of LVEF (thus incorporating HFrEF or HFpEF), or the presence (even if asymptomatic) of moderate-severe LV systolic impairment on cardiac imaging[335]; HCM confers a high stroke risk[336] and OAC is beneficial for stroke reduction.[337] |
| H | **Hypertension**<br>or on antihypertensive therapy | 1 | History of hypertension may result in vascular changes that predispose to stroke, and a well-controlled BP today may not be well-controlled over time.[324] Uncontrolled BP - the optimal BP target associated with the lowest risk of ischaemic stroke, death, and other cardiovascular outcomes is 120 - 129/<80 mmHg.[338] |
| A | **Age 75 years or older** | 2 | Age is a powerful driver of stroke risk, and most population cohorts show that the risk rises from age 65 years upwards.[339] Age-related risk is a continuum, but for reasons of simplicity and practicality, 1 point is given for age 65 - 74 years and 2 points for age ≥75 years. |
| D | **Diabetes mellitus**<br>Treatment with oral hypoglycaemic drugs and/or insulin or fasting blood glucose >125 mg/dL (7 mmol/L) | 1 | Diabetes mellitus is a well-established risk factor for stroke, and more recently stroke risk has been related to duration of diabetes mellitus (the longer the duration of diabetes mellitus, the higher the risk of thromboembolism[340]) and presence of diabetic target organ damage, e.g. retinopathy.[341] Both type 1 and type 2 diabetes mellitus confer broadly similar thromboembolic risk in AF, although the risk may be slightly higher in patients aged <65 years with type 2 diabetes mellitus compared to patients with type 1 diabetes mellitus.[342] |

# $CHA_2DS_2$-VASC Risk Skorlaması

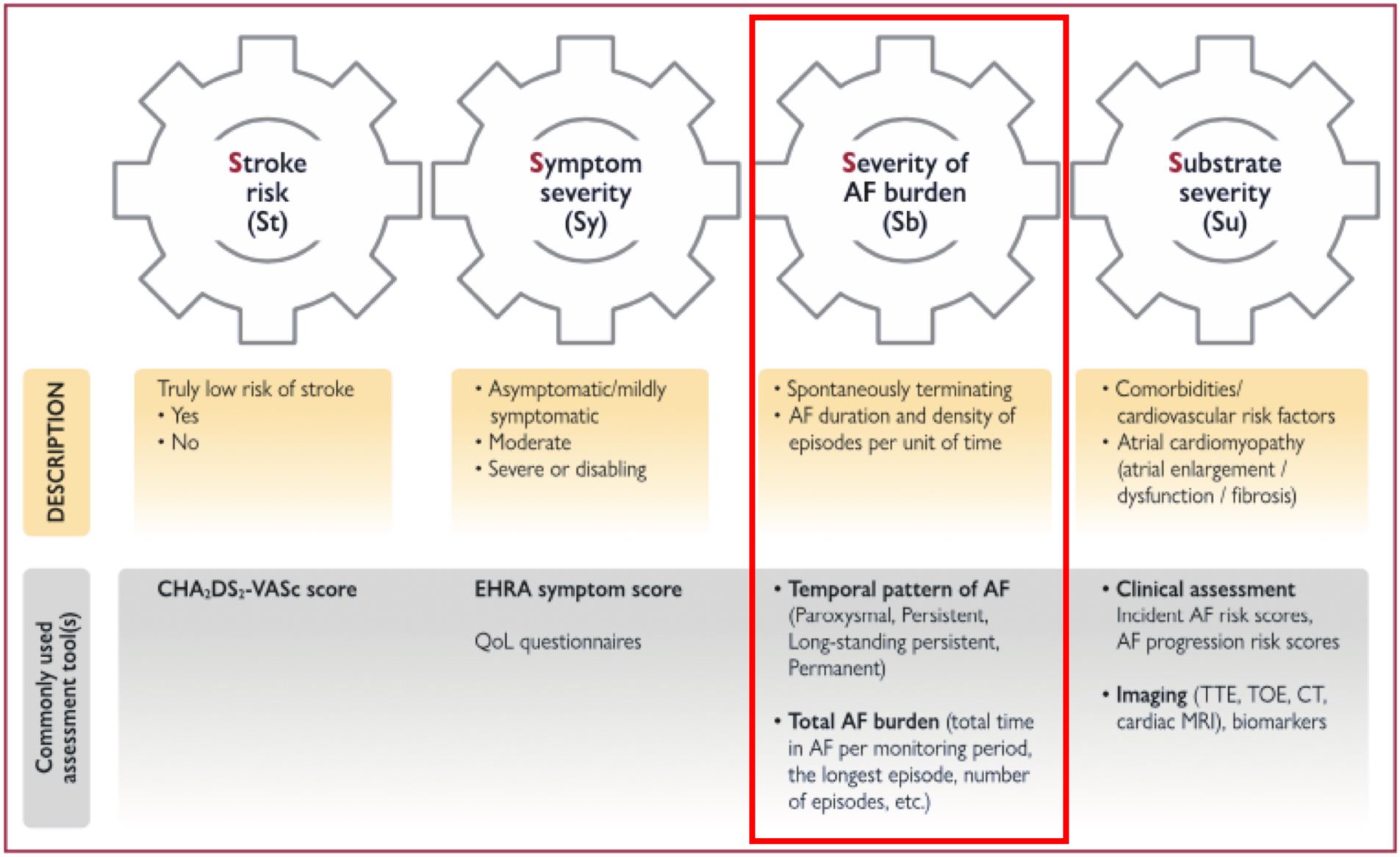
| | | | |
|---|---|---|---|
| **S** | **Stroke**Previous stroke, TIA, or thromboembolism | 2 | Previous stroke, systemic embolism, or TIA confers a particularly high risk of ischaemic stroke, hence weighted 2 points. Although excluded from RCTs, AF patients with ICH (including haemorrhagic stroke) are at very high risk of subsequent ischaemic stroke, and recent observational studies suggest that such patients would benefit from oral anticoagulation.[343–345] |
| **V** | **Vascular disease**<br>Angiographically significant CAD, previous myocardial infarction, PAD, or aortic plaque | 1 | Vascular disease (PAD or myocardial infarction) confers a 17 - 22% excess risk, particularly in Asian patients.[346–348] Angiographically significant CAD is also an independent risk factor for ischaemic stroke among AF patients (adjusted incidence rate ratio 1.29, 95% CI 1.08 - 1.53).[349] Complex aortic plaque on the descending aorta, as an indicator of significant vascular disease, is also a strong predictor of ischaemic stroke.[350] |
| **A** | **Age 65 – 74 years** | 1 | See above. Recent data from Asia suggest that the risk of stroke may rise from age 50 - 55 years upwards and that a modified $CHA_2DS_2$-VASc score may be used in Asian patients.[351,352] |
| **Sc** | **Sex category (female)** | 1 | A stroke risk modifier rather than a risk factor.[353] |
| **Maximum score** | | **9** | |




| | Stroke risk (St) | Symptom severity (Sy) | Severity of AF burden (Sb) | Substrate severity (Su) |
|---|---|---|---|---|
| DESCRIPTION | Truly low risk of stroke<br>• Yes<br>• No | • Asymptomatic/mildly symptomatic<br>• Moderate<br>• Severe or disabling | • Spontaneously terminating<br>• AF duration and density of episodes per unit of time | • Comorbidities/ cardiovascular risk factors<br>• Atrial cardiomyopathy (atrial enlargement / dysfunction / fibrosis) |
| Commonly used assessment tool(s) | **$CHA_2DS_2$-VASc score** | **EHRA symptom score**<br><br>QoL questionnaires | • **Temporal pattern of AF** (Paroxysmal, Persistent, Long-standing persistent, Permanent)<br><br>• **Total AF burden** (total time in AF per monitoring period, the longest episode, number of episodes, etc.) | • **Clinical assessment** Incident AF risk scores, AF progression risk scores<br><br>• **Imaging** (TTE, TOE, CT, cardiac MRI), biomarkers |




| Score | Symptoms | Description |
|---|---|---|
| 1 | None | AF does not cause any symptoms |
| 2a | Mild | Normal daily activity not affected by symptoms related to AF |
| 2b | Moderate | Normal daily activity not affected by symptoms related to AF, but patient troubled by symptoms |
| 3 | Severe | Normal daily activity affected by symptoms related to AF |
| 4 | Disabling | Normal daily activity discontinued |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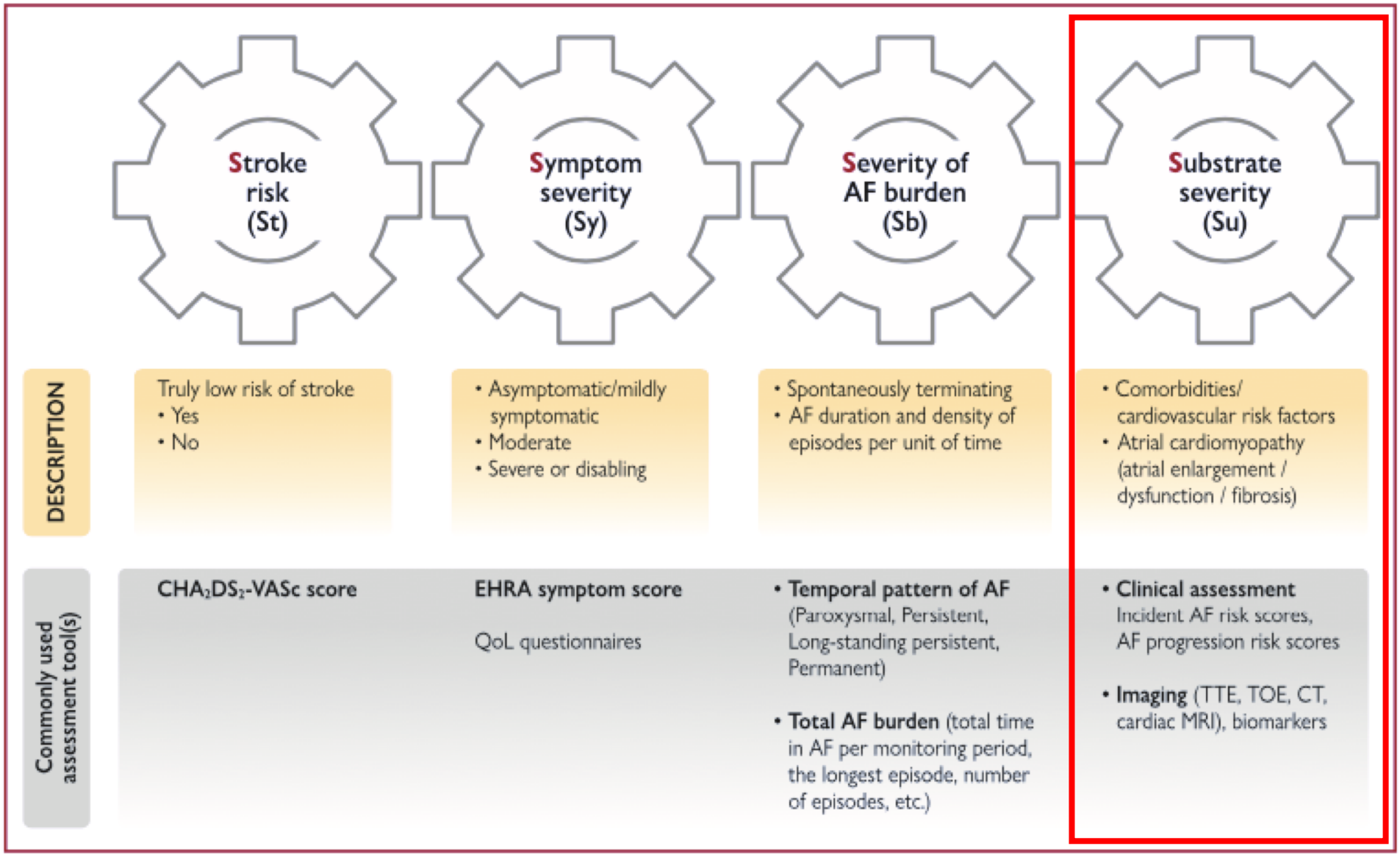
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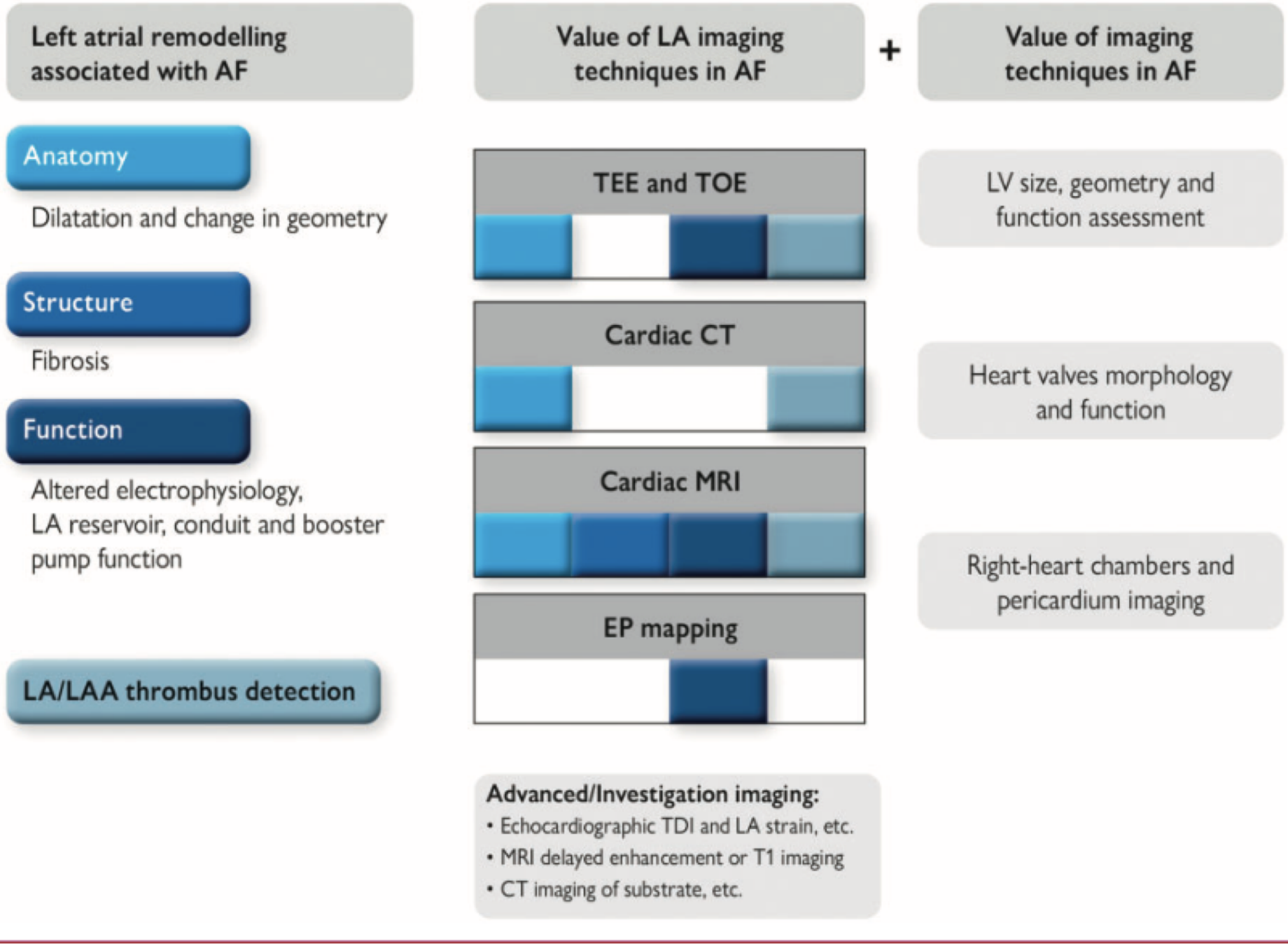
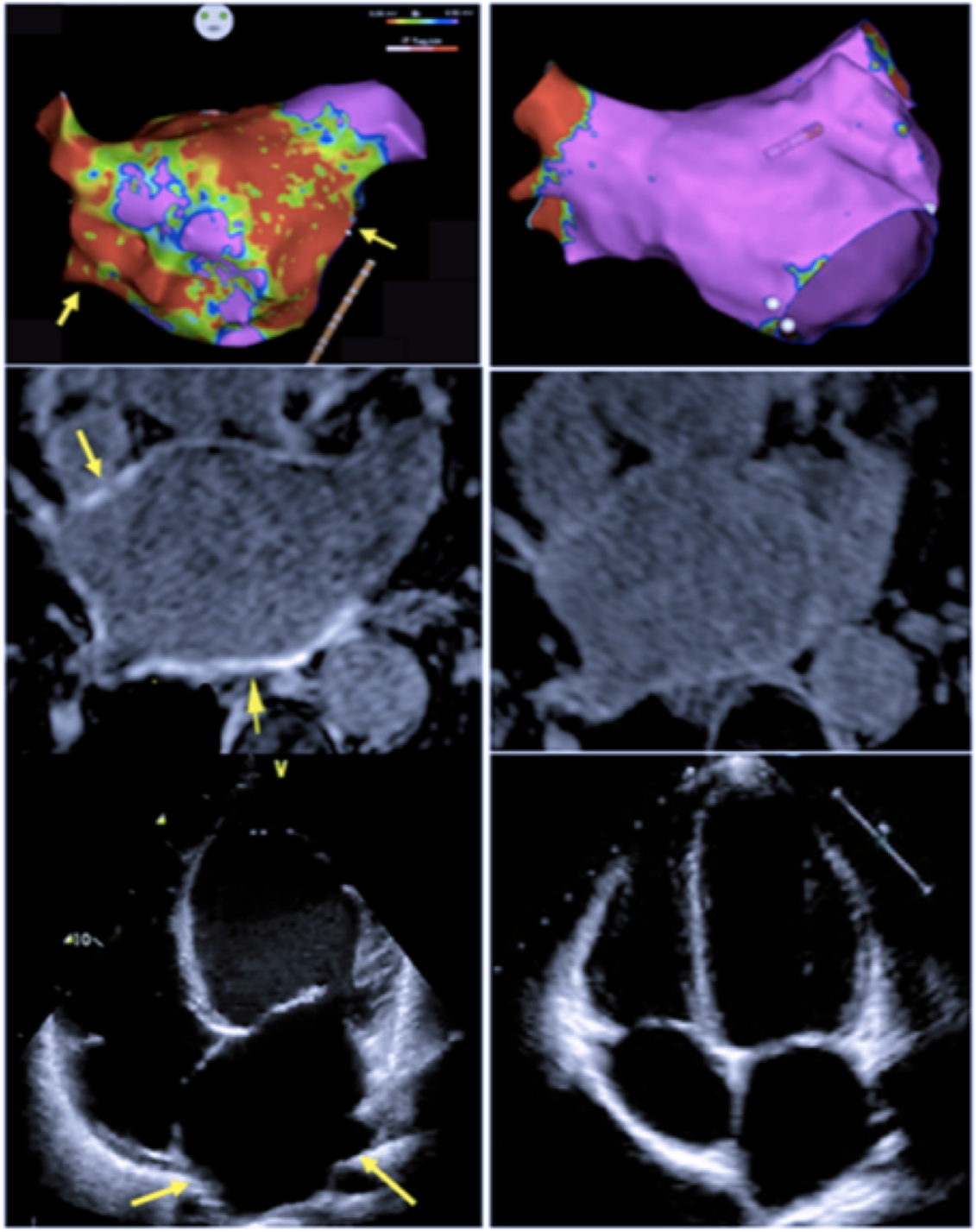
# Atriyal Kardiyomiyopati

- Potansiyel olarak ilgili klinik belirtilerle beraber atriyumun yapısında, kontraksiyonu ve elektrofizyolojik özelliklerinde oluşan değişiklikler
- Klinik sınıflaması;
  - Morfoloji
  - Yapı
  - Elektriksel fonksiyonlar
  - Mekanik fonksiyonlar


Left atrial remodelling associated with AF
Value of LA imaging techniques in AF
+
Value of imaging techniques in AF
Anatomy
Dilatation and change in geometry
Structure
Fibrosis
Function
Altered electrophysiology, LA reservoir, conduit and booster pump function
LA/LAA thrombus detection
TEE and TOE
Cardiac CT
Cardiac MRI
EP mapping
LV size, geometry and function assessment
Heart valves morphology and function
Right-heart chambers and pericardium imaging
Advanced/Investigation imaging:
• Echocardiographic TDI and LA strain, etc.
• MRI delayed enhancement or T1 imaging
• CT imaging of substrate, etc.



# AF Taraması

# AF Taraması Neden Gerekli?

- Asemptomatik klinik AF → yüksek inme ve mortalite riski
- Taramada yakalanan AF vakaları ile rutin sağlık hizmeti sırasında AF saptanan hastaların tedavi yanıtları benzer
- Giyilebilir teknolojilerdeki gelişmeler daha ucuz ve daha pratik tarama ve AF yükü tespit etme imkanı sunmakta ve sunacaktır

Patient initiated (or medical professional) oscillometric blood pressure cuff

Pulse palpitation, auscultation

Patient initiated (or medical professional) intermittent ECG rhythm strip using smartphone or dedicated connectable device

Patient initiated photoplethysmogram on smartphone

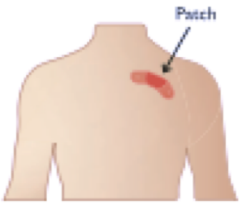
Semi-continuous photoplethysmogram on a smartwatch or wearable

Intermittent smartwatch ECG initiated by semi-continuous photoplethysmogram with prompt notification of irregular rhythm or symptoms

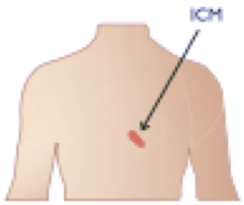
Wearable belts for continuous recordings

Stroke unit/in hospital telemetry monitoring

Long-term Holter




1-2 week continuous ECG patches

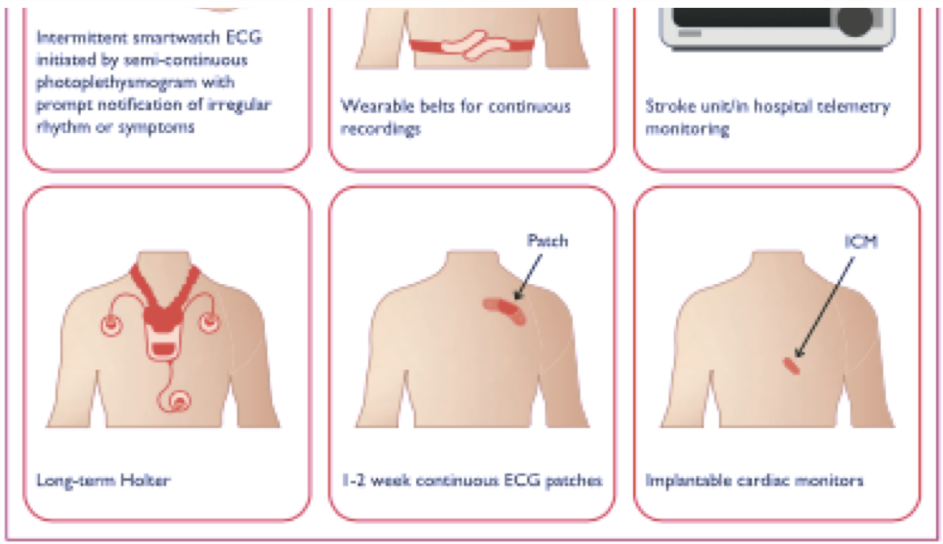



Implantable cardiac monitors


**Table 5** Sensitivity and specificity of various AF screening tools considering the 12-lead ECG as the gold standard[173]

| | Sensitivity | Specificity |
|---|---|---|
| **Pulse taking**[203] | 87 - 97% | 70 - 81% |
| **Automated BP monitors**[204–207] | 93 - 100% | 86 - 92% |
| **Single lead ECG**[208–211] | 94 - 98% | 76 - 95% |
| **Smartphone apps**[188,189,191,195,212,213] | 91.5 - 98.5% | 91.4 - 100% |
| **Watches**[196,198,213,214] | 97 - 99% | 83 - 94% |





The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

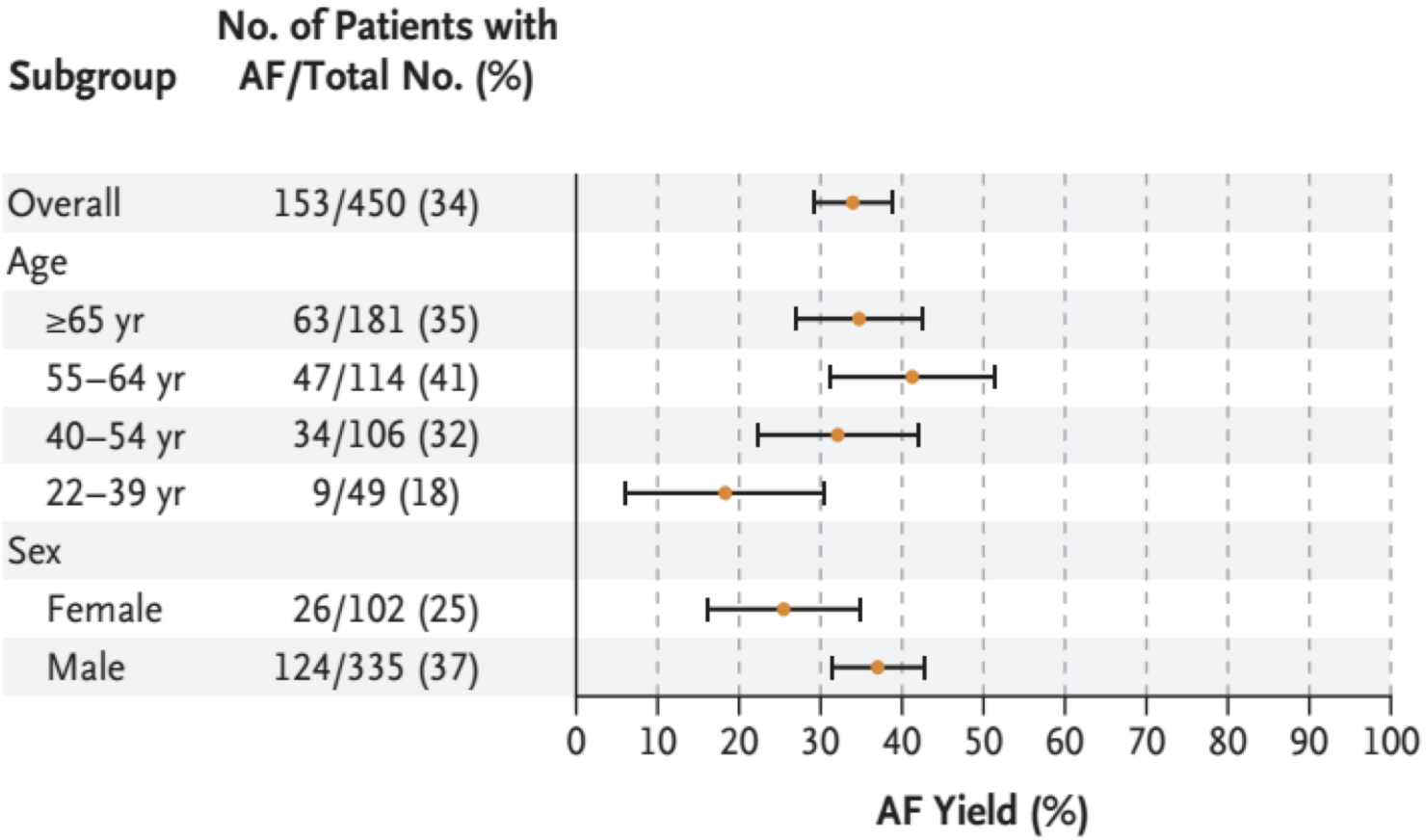
# Large-Scale Assessment of a Smartwatch to Identify Atrial Fibrillation

Marco V. Perez, M.D., Kenneth W. Mahaffey, M.D., Haley Hedlin, Ph.D., John S. Rumsfeld, M.D., Ph.D., Ariadna Garcia, M.S., Todd Ferris, M.D., Vidhya Balasubramanian, M.S., Andrea M. Russo, M.D., Amol Rajmane, M.D., Lauren Cheung, M.D., Grace Hung, M.S., Justin Lee, M.P.H., Peter Kowey, M.D., Nisha Talati, M.B.A., Divya Nag, Santosh E. Gummidipundi, M.S., Alexis Beatty, M.D., M.A.S., Mellanie True Hills, B.S., Sumbul Desai, M.D., Christopher B. Granger, M.D., Manisha Desai, Ph.D., and Mintu P. Turakhia, M.D., M.A.S., for the Apple Heart Study Investigators*

## ABSTRACT

| Characteristic | Total Cohort (N=419,297) | Notification Subgroup (N=2161) | ECG Patch Subgroup (N=450) |
|---|---|---|---|
| Sex — no. (%)† | | | |
| Female | 177,087 (42) | 461 (21) | 102 (23) |
| Male | 238,700 (57) | 1672 (77) | 335 (74) |
| Other | 396 (0.1) | 0 | 0 |
| Not reported | 3,114 (0.7) | 28 (1.3) | 13 (2.9) |
| Age — yr | 41±13 | 57±15 | 59±14 |
| Age distribution — no. (%) | | | |
| ≥65 yr | 24,626 (5.9) | 775 (36) | 181 (40) |
| 55–64 yr | 42,633 (10) | 556 (26) | 114 (25) |
| 40–54 yr | 132,696 (32) | 488 (23) | 106 (24) |
| 22–39 yr | 219,179 (52) | 341 (16) | 49 (11) |
| Not reported | 163 (<0.1) | 1 (<0.1) | 0 |

ORIGINAL ARTICLE



JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 74, NO. 19, 2019

PUBLISHED BY ELSEVIER

# Mobile Photoplethysmographic Technology to Detect Atrial Fibrillation

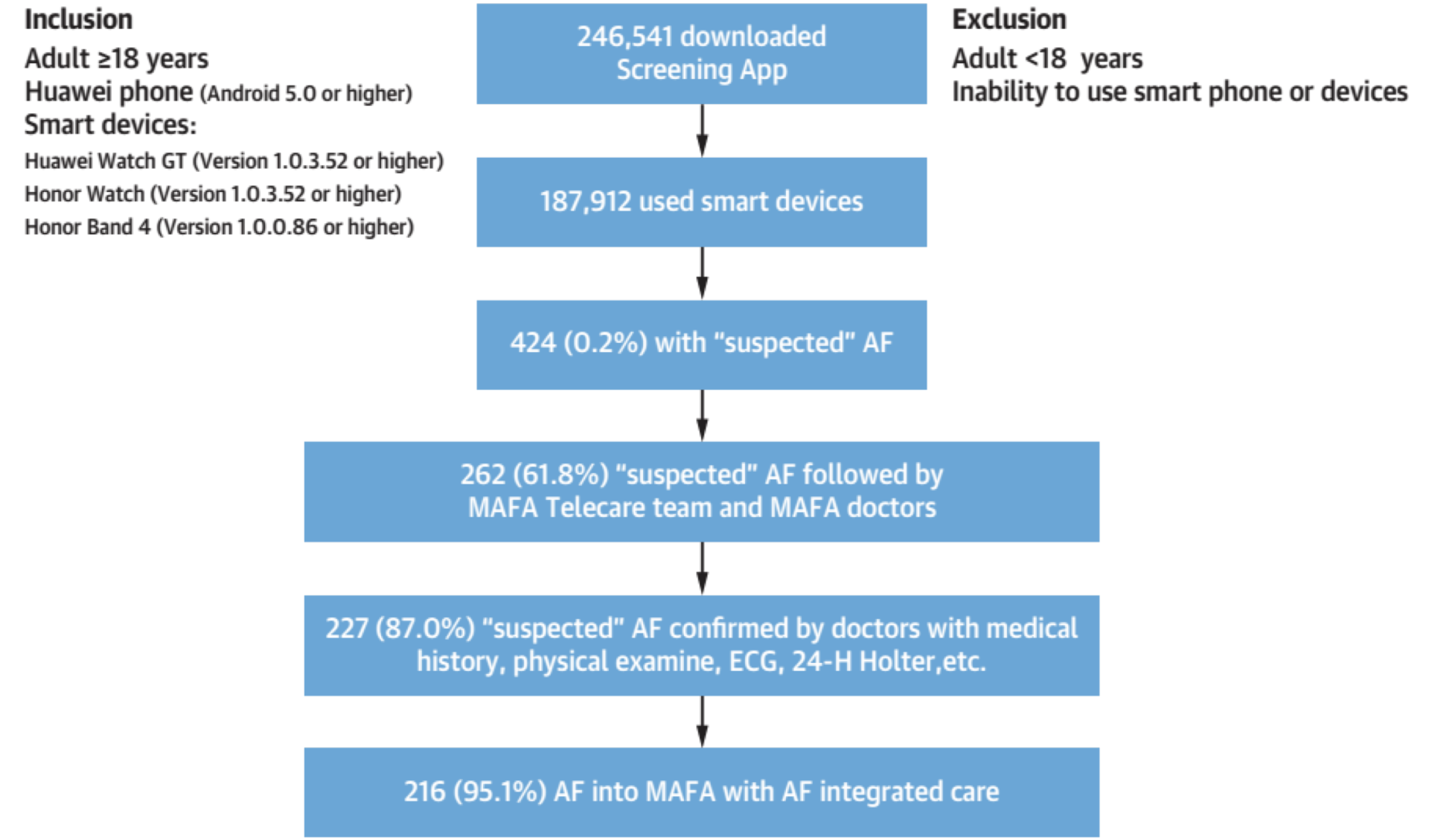
Yutao Guo, MD, PhD,[a] Hao Wang, MD, PhD,[a] Hui Zhang, MD,[a] Tong Liu, MD, PhD,[b] Zhaoguang Liang, MD, PhD,[c] Yunlong Xia, MD, PhD,[d] Li Yan, MD, PhD,[e] Yunli Xing, MD, PhD,[f] Haili Shi, MD,[g] Shuyan Li, MD, PhD,[h] Yanxia Liu, MD,[i] Fan Liu, MD,[j] Mei Feng, MD,[k] Yundai Chen, MD, PhD,[a] Gregory Y.H. Lip, MD,[l,m] on behalf of the MAFA II Investigators

## ABSTRACT

**BACKGROUND** Low detection and nonadherence are major problems in current management approaches for patients with suspected atrial fibrillation (AF). Mobile health devices may enable earlier AF detection and improved AF management.

**OBJECTIVES** This study sought to investigate the effectiveness of AF screening in a large population-based cohort using smart device–based photoplethysmography (PPG) technology, combined with a clinical care AF management pathway using a mobile health approach.

**METHODS** AF screening was performed with smart devices using PPG technology, which were made available for the population ≥18 years of age across China. Monitoring for at least 14 days with a wristband (Honor Band 4) or wristwatch



# AF SCREENING

## RISKS

- Abnormal results may cause anxiety
- ECG misinterpretation results may lead to overdiagnosis and overtreatment
- ECG may detect other abnormalities (true or false positives) that may lead to invasive tests and treatments that have the potential for serious harm (e.g., angiography / revascularisation with bleeding, contrast-induced nephropathy and allergic reactions to the contrast)

## BENEFITS

**Prevention of:**
- Stroke/SE using OAC in patients at risk
- Subsequent onset of symptoms

**Prevention/reversal of:**
- Electrical/mechanical atrial remodelling
- AF-related haemodynamic derangements
- Atrial and ventricular tachycardia-induced cardiopmyopathy

**Prevention/reduction of:**
- AF-related morbidity; hospitalization; mortality

**Reduction of:**
- The outcomes associated with conditions / diseases associated with AF that are discovered and treated as a consequence of the examinations prompted by AF detection

# Tarama

| Recommendation | Class[a] | Level[b] |
|---|---|---|
| Opportunistic screening for AF by pulse taking or ECG rhythm strip is recommended in patients ≥65 years of age.[188,211,223,225] | I | B |
| It is recommended to interrogate pacemakers and implantable cardioverter defibrillators on a regular basis for AHRE.[c224,226] | I | B |
| When screening for AF it is recommended that:[217,218]<br>• The individuals undergoing screening are informed about the significance and treatment implications of detecting AF.<br>• A structured referral platform is organized for screen-positive cases for further physician-led clinical evaluation to confirm the diagnosis of AF and provide optimal management of patients with confirmed AF.<br>• Definite diagnosis of AF in screen-positive cases is established only after physician reviews the single-lead ECG recording of ≥30 s or 12-lead ECG and confirms that it shows AF. | I | B |
| Systematic ECG screening should be considered to detect AF in individuals aged ≥75 years, or those at high risk of stroke.[212,224,227] | IIa | B |

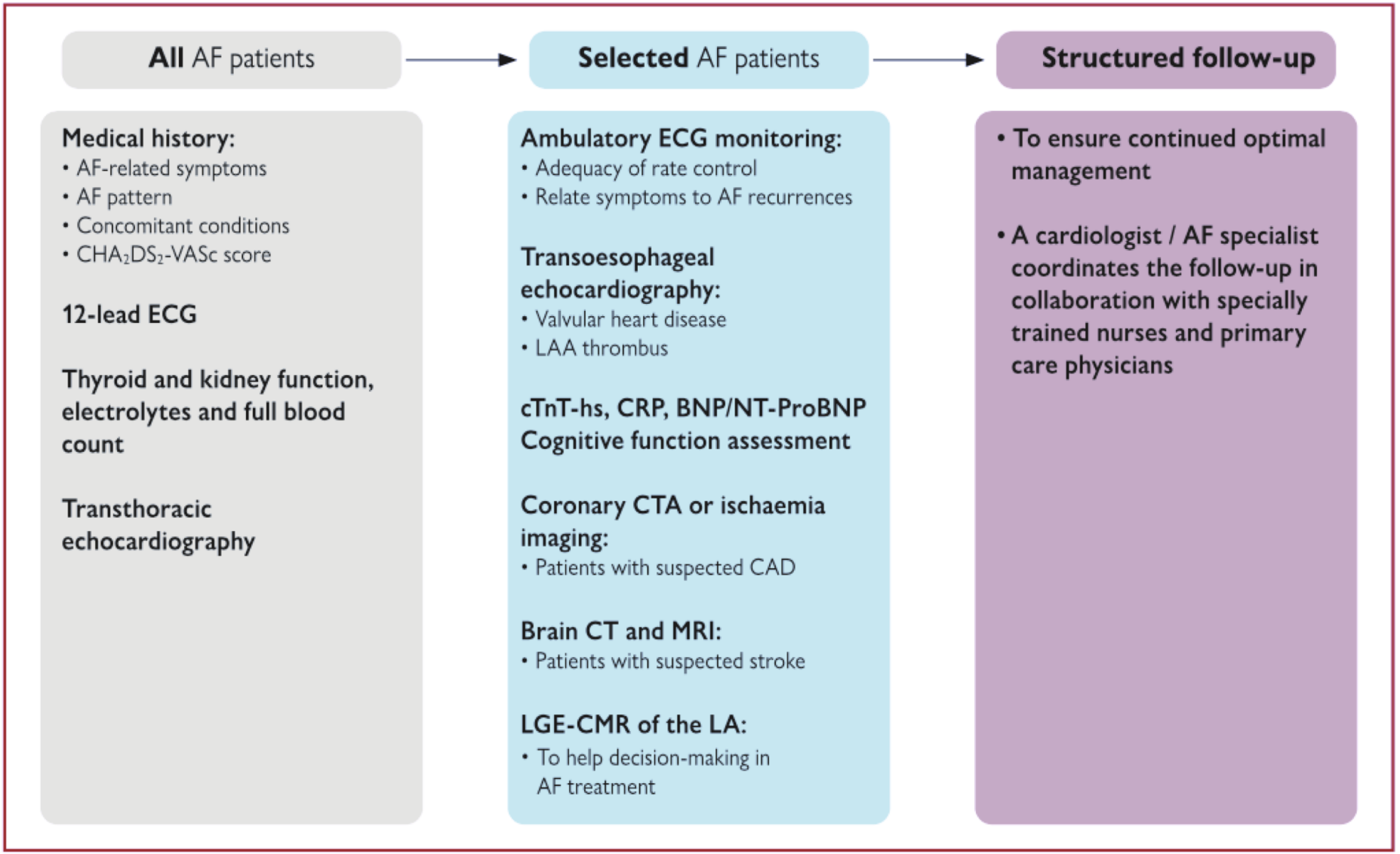
# Tarama

| Recommendations | Class[a] | Level[b] |
|---|---|---|
| Identification and management of risk factors and concomitant diseases is recommended as an integral part of treatment in AF patients.[888] | I | B |
| Modification of unhealthy lifestyle and targeted therapy of intercurrent conditions is recommended to reduce AF burden and symptom severity.[245,636,887,889,1016,1052] | I | B |
| Opportunistic screening for AF is recommended in hypertensive patients.[26,172,222] | I | B |
| Attention to good BP control is recommended in AF patients with hypertension to reduce AF recurrences and risk of stroke and bleeding.[26,1035] | I | B |

# Tarama

| | | |
|---|---|---|
| In obese patients with AF, weight loss together with management of other risk factors should be considered to reduce AF incidence, AF progression, AF recurrences, and symptoms.[898,899,1011] | IIa | B |
| Advice and management to avoid alcohol excess should be considered for AF prevention and in AF patients considered for OAC therapy.[324,1012,1014,1016] | IIa | B |
| Physical activity should be considered to help prevent AF incidence or recurrence, with the exception of excessive endurance exercise, which may promote AF.[1027–1033,1063] | IIa | C |
| Opportunistic screening for AF should be considered in patients with OSA.[172] | IIa | C |
| Optimal management of OSA may be considered, to reduce AF incidence, AF progression, AF recurrences, and symptoms.[650,651,1047–1051] | IIb | C |

# Tanısal Değerlendirme



# Sonuç olarak;

2020 ESC Atriyal Fibrilasyon kılavuzu;

- Daha güncel ve kanıta dayalı AF yönetimi imkanı sağlamaktadır
- En önemli yeniliklerden bir tanesi »Yapılandırılmış AF Nitelemesi»
- İBAO – AF şeması geleneksel zamansal AF paternlerine göre daha ayrıntılı bir değerlendirme ile hastalar için daha etkili ve kişiselleştirilmiş bir tedavi imkanı sunma potansiyeli sağlayabilir

# Sonuç olarak;

- Giyilebilir teknolojilerin daha yaygın kullanımı, daha fazla AF taraması yapma imkanı sağlaması yanında riskleri de beraberinde getirmektedir
- AF yükü terminolojik olarak verilmiş ama net bir eşik belirtilmiyor
- Gri alanların netleşmesi için daha fazla çalışma ve kanıta ihtiyaç var


Teşekkürler