

Update Kardiologie - 1. Juli 2021 Klinik Linde



KGP

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ESC VHF Guidelines 2020

Was muss die Hausärztin wissen

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CC To ABC

Confirm AF



A 12-lead ECG or a rhythm strip showing AF pattern for ≥ 30 s

Characterise AF (the 4S-AF scheme)



Treat AF: The ABC pathway



1. Identify low-risk patients
CHA₂DS₂-VASc 0(m), 1(f)
2. Offer stroke prevention if
CHA₂DS₂-VASc ≥ 1 (m), 2(f)
Assess bleeding risk, address
modifiable bleeding risk factors
3. Choose OAC (NOAC or VKA
with well-managed TTR)

- Assess symptoms,
QoL and patient's
preferences
- Optimize rate
control
- Consider a rhythm
control strategy
(CV, AADs, ablation)

- Comorbidities and
cardiovascular risk
factors
- Lifestyle changes
(obesity reduction,
regular exercise,
reduction of alcohol use,
etc.)



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Take home message...

- Diagnose
- Therapieoptionen
 - Antikoagulation
 - Medikamentös
- Interventionell
- Substrat
- Prognose



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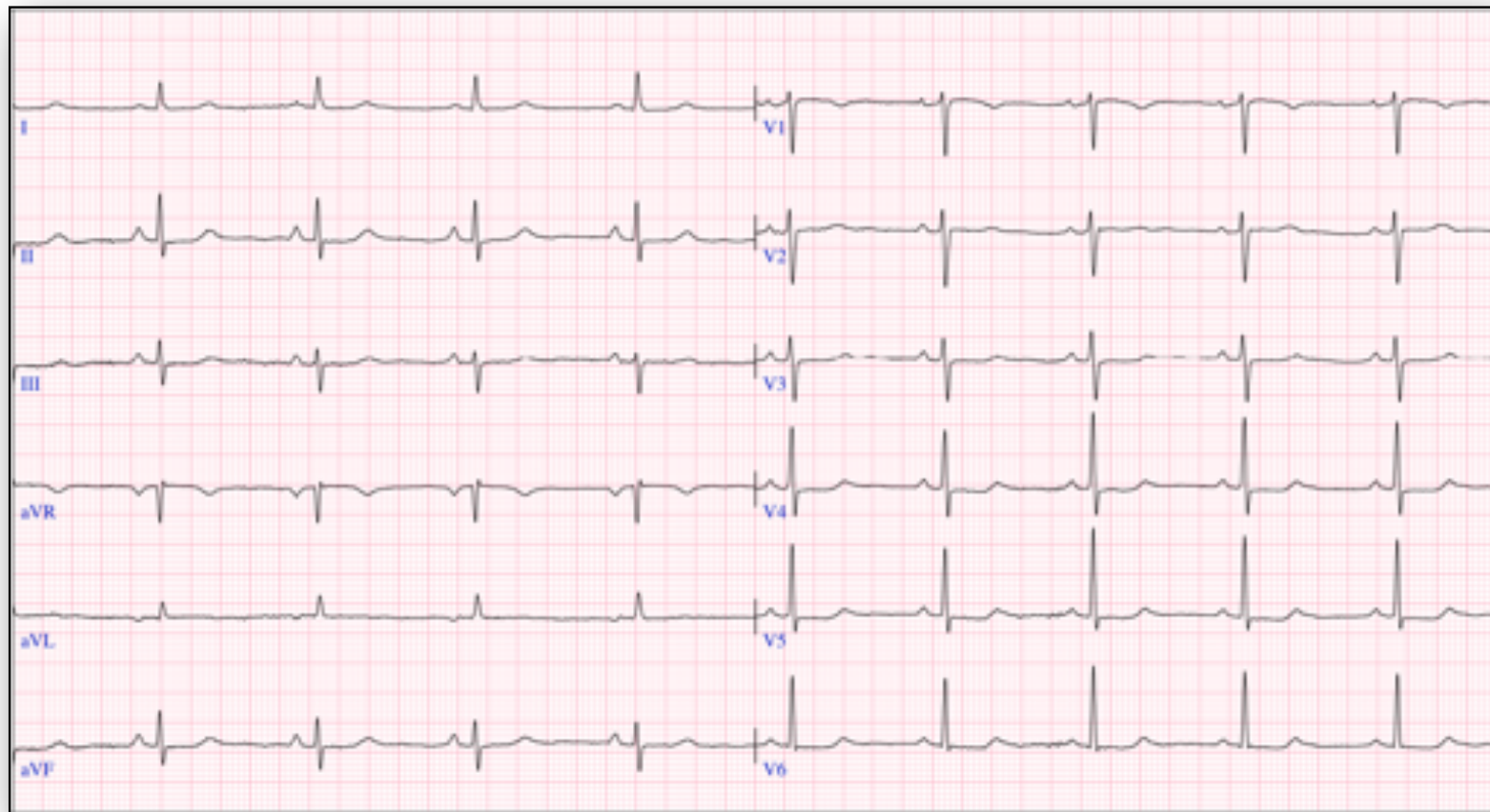
Fallbeispiel Diagnose

- 47 jährige Patientin, intermittierende Palpitationen, 2 x Synkope
- Echo / Ergo unauffällig
- AnfallsEKG mit Vorhofflattern -> Ablation
- 8 Jahre später rezidivierende Palpitationen ohne Synkopen, arrhythmisch



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Fallbeispiel Diagnose





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Fallbeispiel Diagnose

- Patientin in der Zwischenzeit 58 jährig, behandelte art. Hypertonie
- CHADS Vasc 2 -> OAK?
- Vd. ad VHF genügt nicht
- Wie weiter?

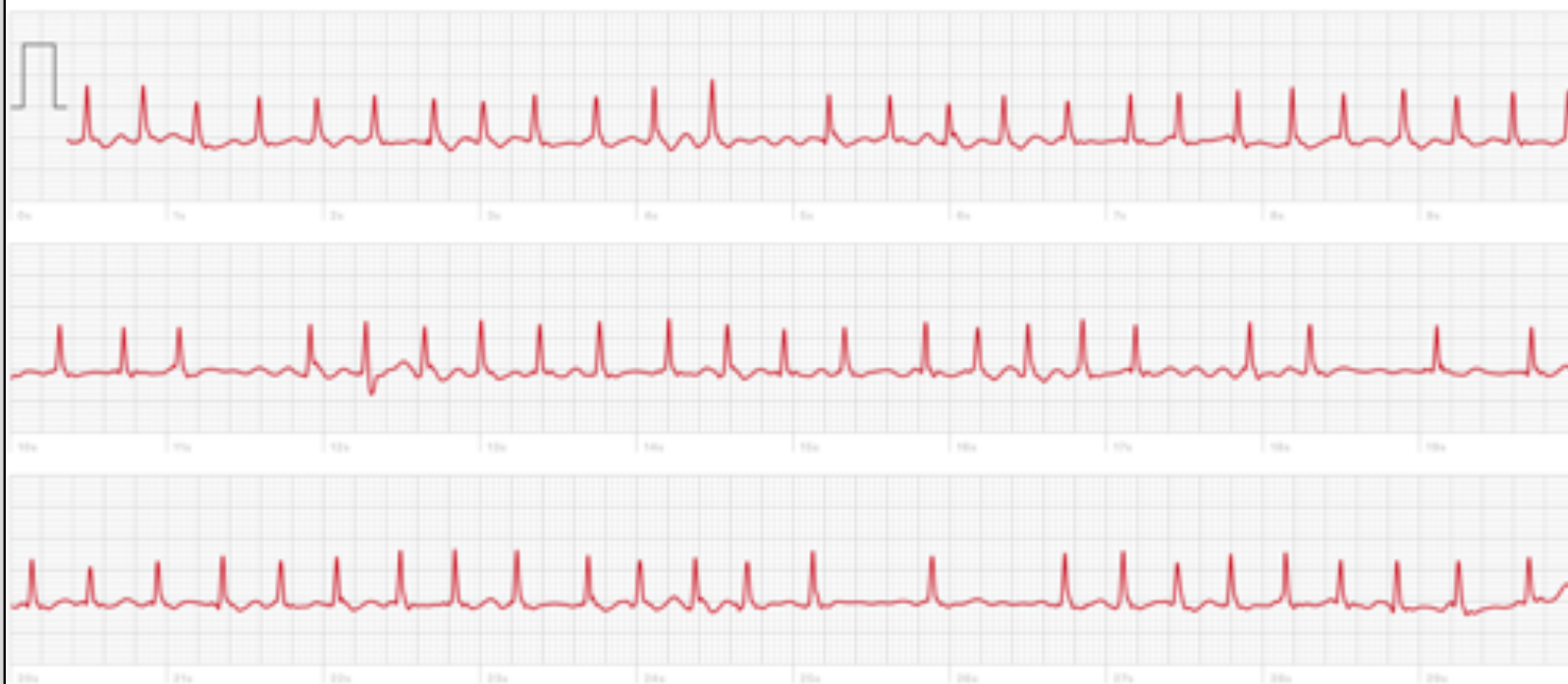
Geburtsdatum: 29.06.1962 (Alter 58)

Aufgezeichnet am 02.06.2021 um 08:21

Vorhofflimmern — ❤️ 146 BPM

Dieses EKG deutet auf Vorhofflimmern und eine hohe Herzfrequenz hin.

Wenn du dieses Ergebnis nicht erwartet hast oder deine Herzfrequenz hoch bleibt, solltest du bald mit deinem Arzt sprechen.



25 mm/s, 10 mm/mV, Ableitung I, 512 Hz, iOS 14.6, watchOS 7.5, Watch6,1, Algorithmus Version 2 – Die Wellenform ist vergleichbar mit einem Ableitung-I-EKG. Weitere Informationen sind in der Gebrauchsanweisung erhältlich.



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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*



RESULTS

We recruited 419,297 participants over 8 months. Over a median of 117 days of monitoring, 2161 participants (0.52%) received notifications of irregular pulse. Among the 450 participants who returned ECG patches containing data that could be analyzed — which had been applied, on average, 13 days after notification — atrial fibrillation was present in 34% (97.5% confidence interval [CI], 29 to 39) overall and in 35% (97.5% CI, 27 to 43) of participants 65 years of age or older. Among participants who



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Sinusrhythmus — ♥ 53 BPM Ⓜ

Dieses EKG weist keine Anzeichen von Vorhofflimmern auf.



33 mm/s, 10 mm/mV, Ableitung I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6 — Die Referenz ist vergleichbar mit einem Ableitung-I-EKG. Weitere Informationen sind in der Gebrauchsanweisung erhältlich.

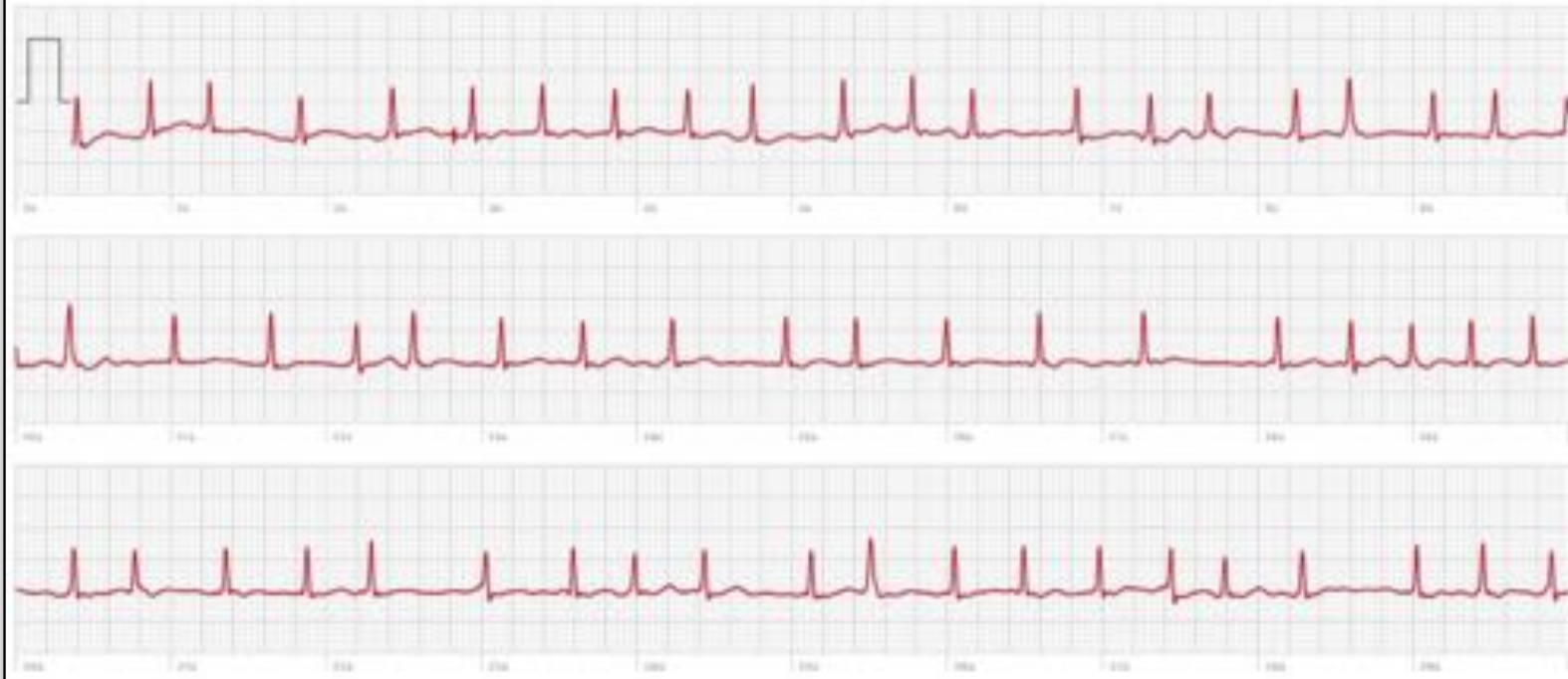


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Atrial Fibrillation — ❤️ 118 BPM Average

This ECG shows signs of AFib.

If this is an unexpected result, you should talk to your doctor.



Diagnose -> Definition

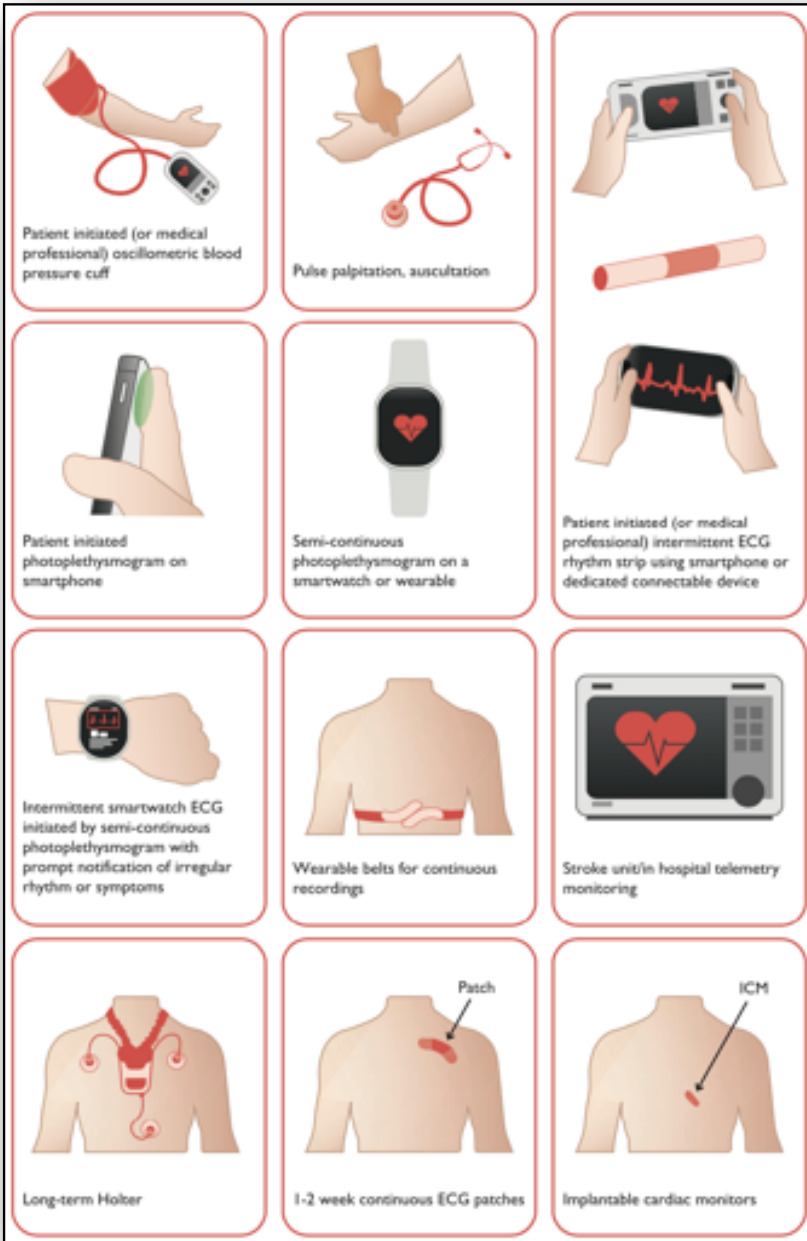
Definition	
AF	<p>A supraventricular tachyarrhythmia with uncoordinated atrial electrical activation and consequently ineffective atrial contraction.</p> <p>Electrocardiographic characteristics of AF include:</p> <ul style="list-style-type: none"> ● Irregularly irregular R-R intervals (when atrioventricular conduction is not impaired), ● Absence of distinct repeating P waves, and ● Irregular atrial activations.

Diagnose & Screening

Recommendations for diagnosis of AF	
<p>ECG documentation is required to establish the diagnosis of AF.</p> <p>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.</p>	I
Recommendations for structured characterization of AF	
<p>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.</p>	IIa
Recommendations for screening to detect AF	
<p>When screening for AF it is recommended that:</p> <ul style="list-style-type: none"> ● The individuals undergoing screening are informed about the significance and treatment implications of detecting AF. ● 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. ● Definite diagnosis of AF in screen-positive cases is established only after the physician reviews the single-lead ECG recording of ≥ 30 s or 12-lead ECG and confirms that it shows AF. 	I



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Paroxysmale Rhythmusstörungen

- Anfallsweise
- Im Intervall oft alles normal
- Anfalls - EKG für Diagnostik und Therapie unerlässlich
- Lange Attacken -> 12 Kanal EKG
- Kurze Attacken?

Screening

	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%

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 cardiomyopathy
- 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

Screening nach cerebrovaskulärem Insult

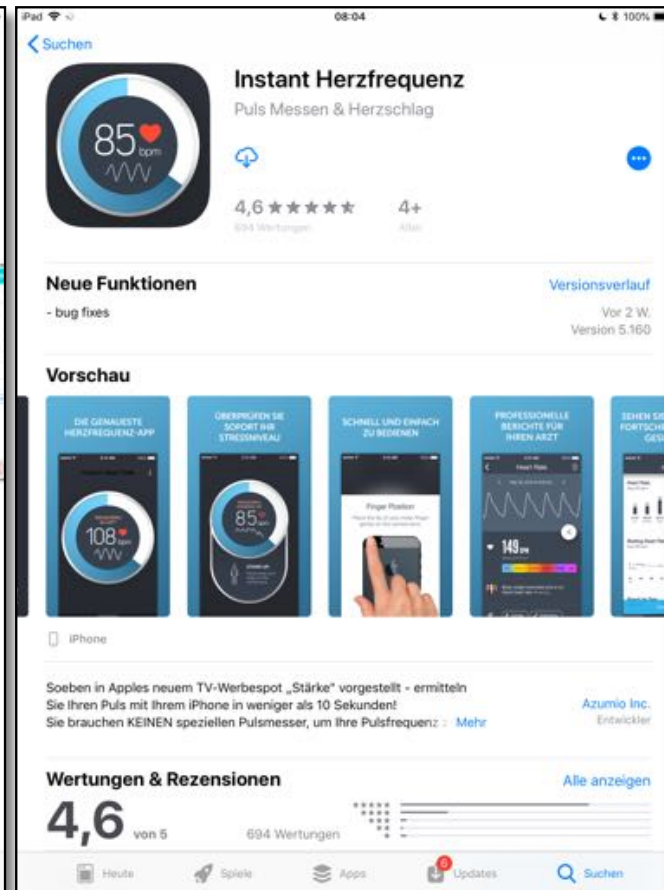
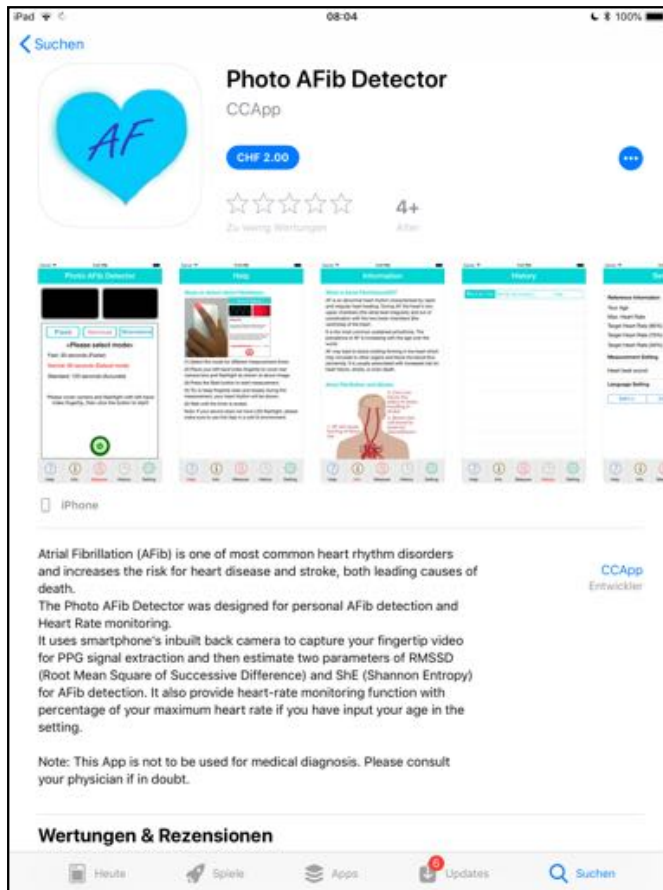
Recommendations	Class ^a	Level ^b
In patients with acute ischaemic stroke or TIA and without previously known AF, monitoring for AF is recommended using a short-term ECG recording for at least the first 24 h, followed by continuous ECG monitoring for at least 72 h whenever possible. ^{1113–1116}	I	B
In selected ^c stroke patients without previously known AF, additional ECG monitoring using long-term non-invasive ECG monitors or insertable cardiac monitors should be considered, to detect AF. ¹¹¹²	IIa	B



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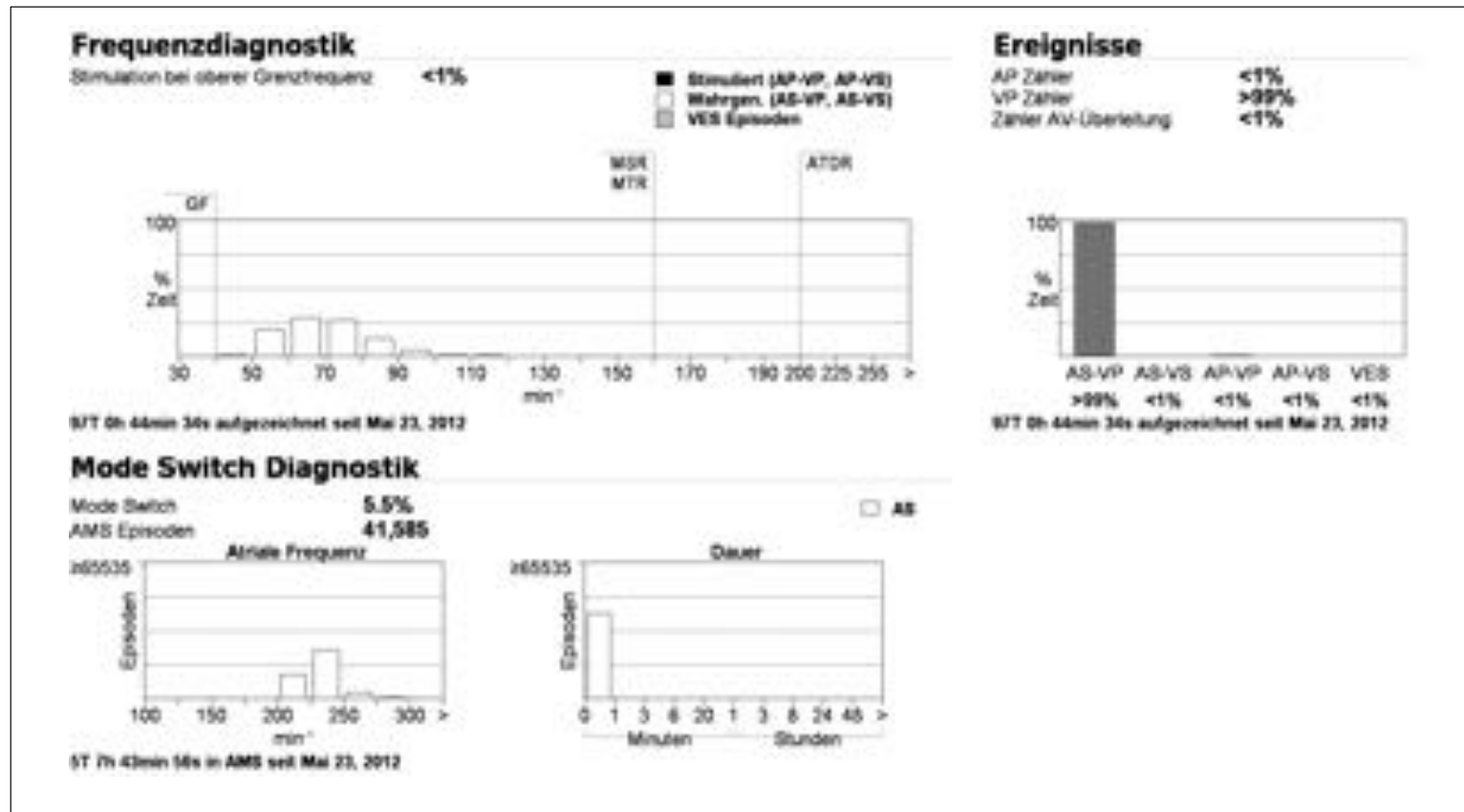
Smartphone Apps



Case report

- 58 jähriger Patient, neu NYHA II
- Belastungstest: 2:1 AV block unter Belastung
- Pulmonale Sarkoidose bekannt
- Echo und kardiales MRI normal
- Keine kardiovaskulären Risikofaktoren
- Procedere: 2-Kammer Schrittmacherimplantation

AHRE - atrial high rate episodes im Schrittmacher



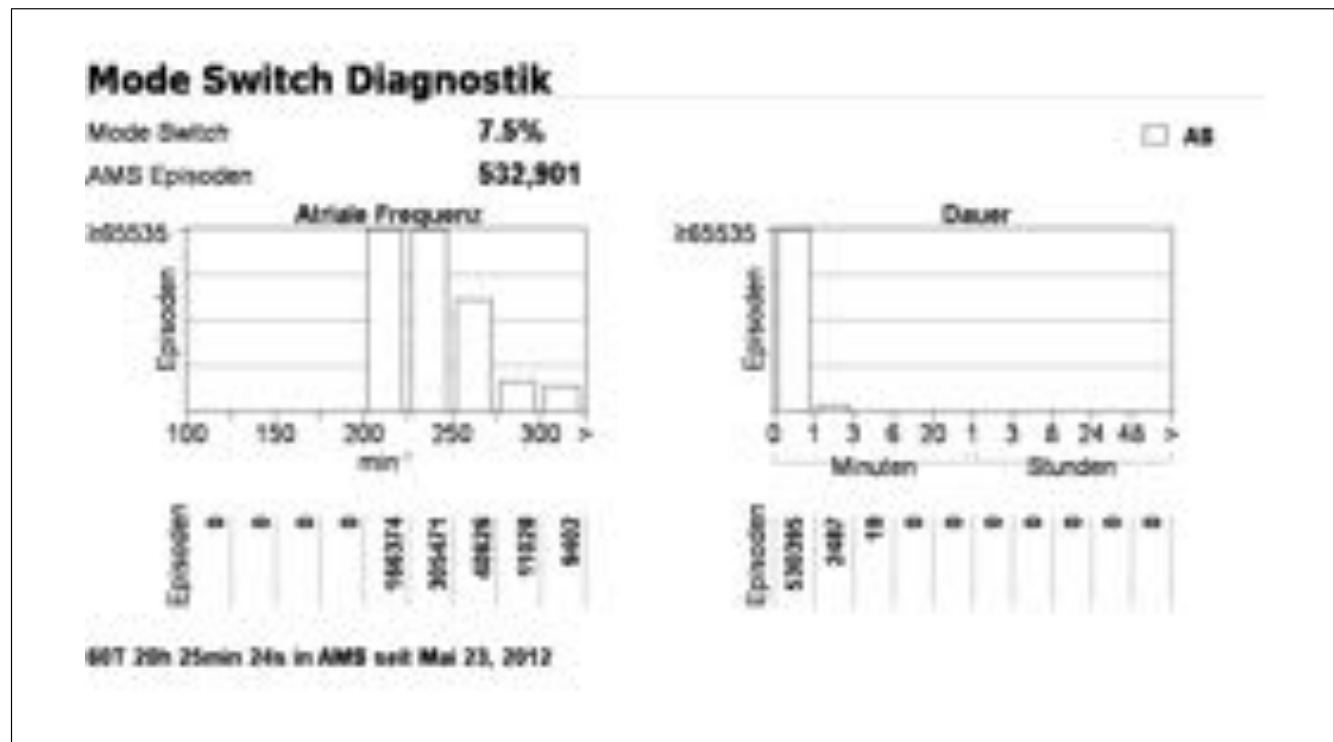
CHA₂DS₂-Vasc Score 0, asymptomatisch -> wie weiter?



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Case report

- Im Verlauf TIA (CHA₂DS₂-Vasc -> 2)
- In PM Abfrage vermehrt AHRE
- Beginn Antikoagulation?





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Antikoagulation

Recommendations	Class ^a	Level ^b
For stroke prevention in AF patients who are eligible for OAC, NOACs are recommended in preference to VKAs (excluding patients with mechanical heart valves or moderate-to-severe mitral stenosis). ^{423,424}	I	A
For stroke risk assessment, a risk-factor-based approach is recommended, using the CHA ₂ DS ₂ -VASc clinical stroke risk score to initially identify patients at 'low stroke risk' (CHA ₂ DS ₂ -VASc score = 0 in men, or 1 in women) who should not be offered antithrombotic therapy. ^{334,388}	I	A
OAC is recommended for stroke prevention in AF patients with CHA ₂ DS ₂ -VASc score ≥ 2 in men or ≥ 3 in women. ⁴¹²	I	A
OAC should be considered for stroke prevention in AF patients with a CHA ₂ DS ₂ -VASc score of 1 in men or 2 in women. Treatment should be individualized based on net clinical benefit and consideration of patient values and preferences. ^{338,378,380}	IIa	B
Antiplatelet therapy alone (monotherapy or aspirin in combination with clopidogrel) is not recommended for stroke prevention in AF. ^{440,441,480,481}	III	A



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Antikoagulation: ja

-

LAA Verschluss: bedingt...

Recommendations for occlusion or exclusion of the LAA

LAA occlusion may be considered for stroke prevention in patients with AF and contraindications for long-term anticoagulant treatment (e.g. intracranial bleeding without a reversible cause).^{448,449,481,482}

IIb

B

Surgical occlusion or exclusion of the LAA may be considered for stroke prevention in patients with AF undergoing cardiac surgery.^{459,483}

IIb

C



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Neue Guidelines - was muss ich wissen?

Diagnose

-> weil wichtigste Komplikation CVI

Antikoagulation

-> weil effektivste Massnahme zur Verhinderung des CVI

Therapieoptionen

-> Multidisziplinär



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CC To ABC

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A 12-lead ECG or a rhythm strip showing AF pattern for ≥ 30 s

Characterise AF (the 4S-4F scheme)



Treat AF: The ABC pathway



1. Identify low-risk patients
CHA₂DS₂-VASc 0(m), 1(f)
2. Offer stroke prevention if
CHA₂DS₂-VASc ≥ 1 (m), 2(f)
Assess bleeding risk, address
modifiable bleeding risk factors
3. Choose OAC (NOAC or VKA
with well-managed TTR)

- Assess symptoms,
QoL and patient's
preferences
- Optimize rate
control
- Consider a rhythm
control strategy
(CV, AADs, ablation)

- Comorbidities and
cardiovascular risk
factors
- Lifestyle changes
(obesity reduction,
regular exercise,
reduction of alcohol use,
etc.)

Therapieoptionen

- **A**ntikoagulation
 - CHA₂DS₂-Vasc
 - DOAC
- **B**essere Symptomkontrolle
 - Optimale Frequenzkontrolle
 - Rhythmuskontrolle
- **C**omorbiditäten
 - Hypertonie
 - Gewicht
 - Sport
 - Alkohol

Therapieoptionen



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Changes in the recommendations

Recommendations about integrated AF management

2020	Class ^a	2016	Class ^a
<i>AF catheter ablation after drug therapy failure</i>			
<p>AF catheter ablation for PVI is recommended for rhythm control after one failed or intolerant class I or III AAD, to improve symptoms of AF recurrences in patients with:</p> <ul style="list-style-type: none"> ● Paroxysmal AF, or ● Persistent AF without major risk factors for AF recurrence, or ● Persistent AF with major risk factors for AF recurrence. 	I	<p>Catheter or surgical ablation should be considered in patients with symptomatic <u>persistent or long-standing persistent AF refractory to AAD therapy to improve symptoms, considering patient choice, benefit and risk, supported by an AF Heart Team.</u></p>	IIa
<i>First-line therapy</i>			
<p>AF catheter ablation:</p> <ul style="list-style-type: none"> ● <u>Is recommended to reverse LV dysfunction in AF patients when tachycardia-induced cardiomyopathy is highly probable, independent of their symptom status.</u> ● <u>Should be considered in selected AF patients with HFrEF to improve survival and reduce HF hospitalization.</u> 	I	<p>AF ablation should be considered in symptomatic patients with AF and HFrEF to improve symptoms and cardiac function when tachycardiomyopathy is suspected.</p>	IIa
	IIa		



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Therapieoptionen

Changes in the recommendations

Recommendations about integrated AF management

2020	Class ^a	2016	Class ^a
<i>Techniques and technologies</i>			
Complete electrical isolation of the pulmonary veins is recommended during all AF catheter-ablation procedures.	I	Catheter ablation should target isolation of the pulmonary veins using radiofrequency ablation or cryothermy balloon catheters.	IIa
If patient has a history of CTI-dependent atrial flutter or if typical atrial flutter is induced at the time of AF ablation, delivery of a CTI lesion may be considered.	IIb	Ablation of common atrial flutter should be considered to prevent recurrent flutter as part of an AF ablation procedure if documented or occurring during the AF ablation	IIa
<i>Lifestyle modification and other strategies to improve outcomes of ablation</i>			
Weight loss is recommended in obese patients with AF, particularly those who are being evaluated to undergo AF ablation.	I	In obese patients with AF, weight loss together with management of other risk factors should be considered to reduce AF burden and symptoms.	IIa

Therapieoptionen

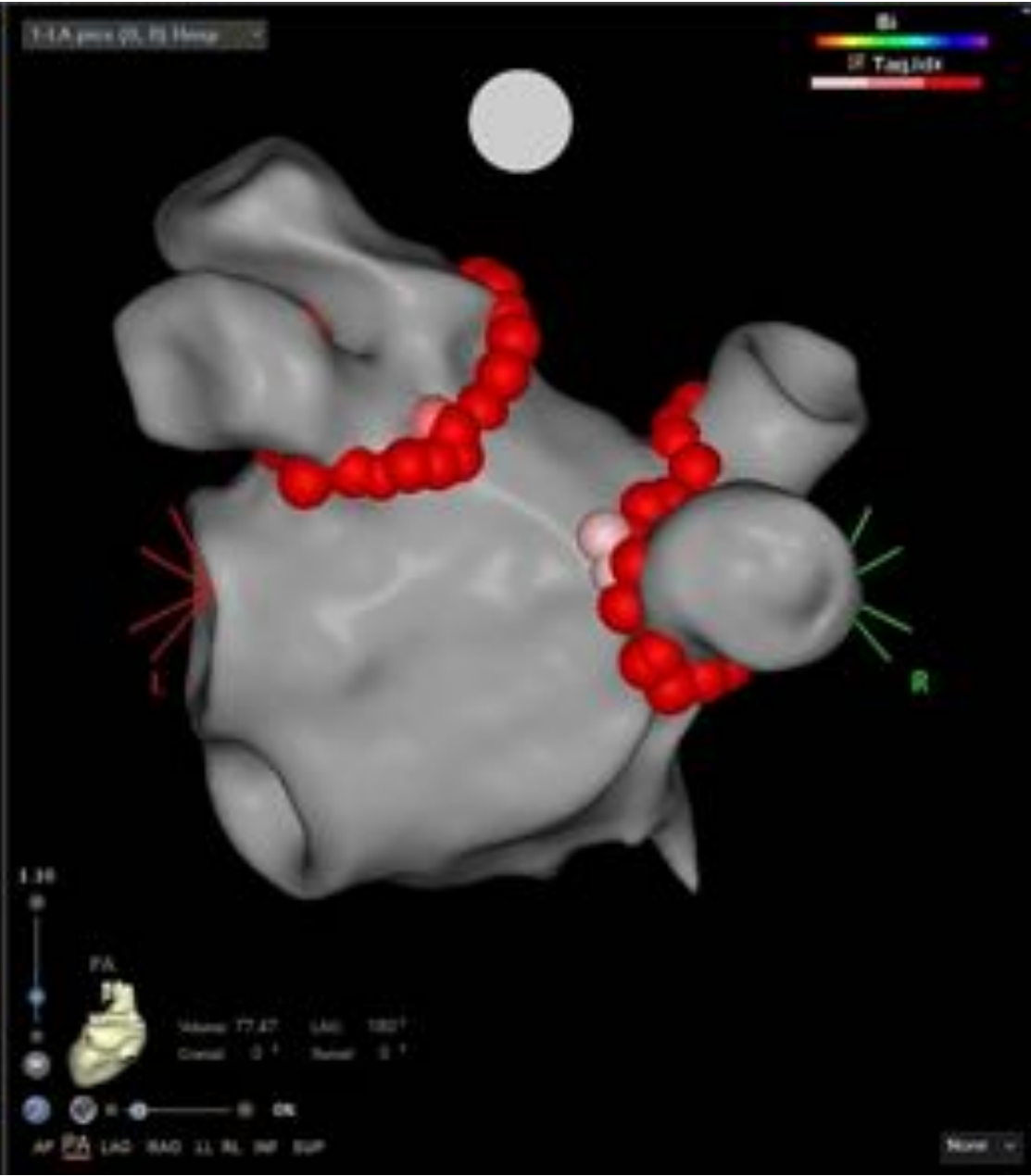
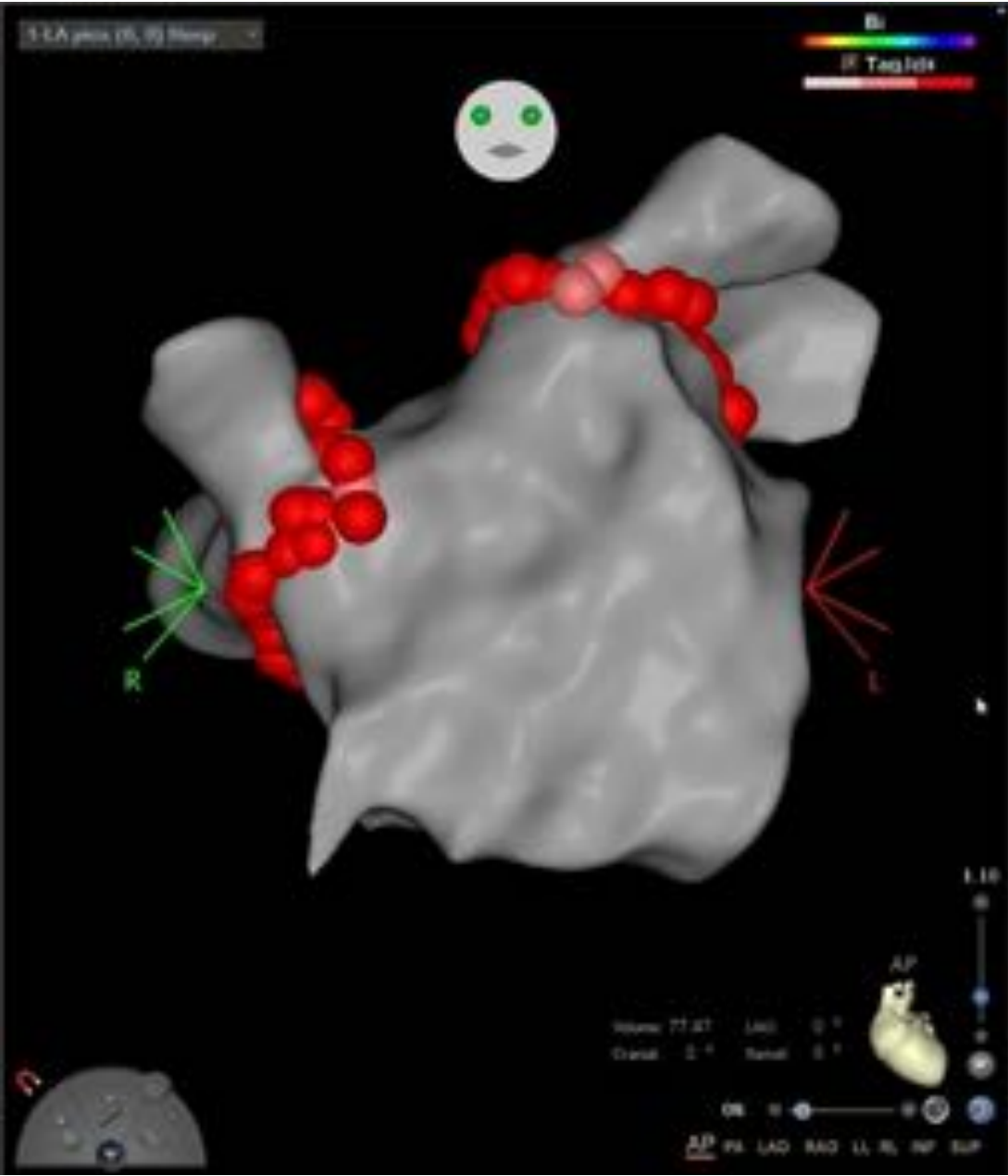
- 57 jähriger Patient, seit 6 Jahren intermittierendes VHF, hochsymptomatisch
- Echo und Ergo normal, Ruhe EKG normal, Anfalls EKG -> tc VHF
- Seit anfangs 2021 vermehrt prolongierte Episoden (bis 6h, bis 2xWoche)
- CHA₂DS₂-Vasc Score 0, EHRA Score IIb
- Wie weiter?
 1. Frequenzkontrolle vs. Rhythmuskontrolle
 2. Wenn Rhythmuskontrolle: Medikamente vs. Ablation
 3. Antikoagulation?

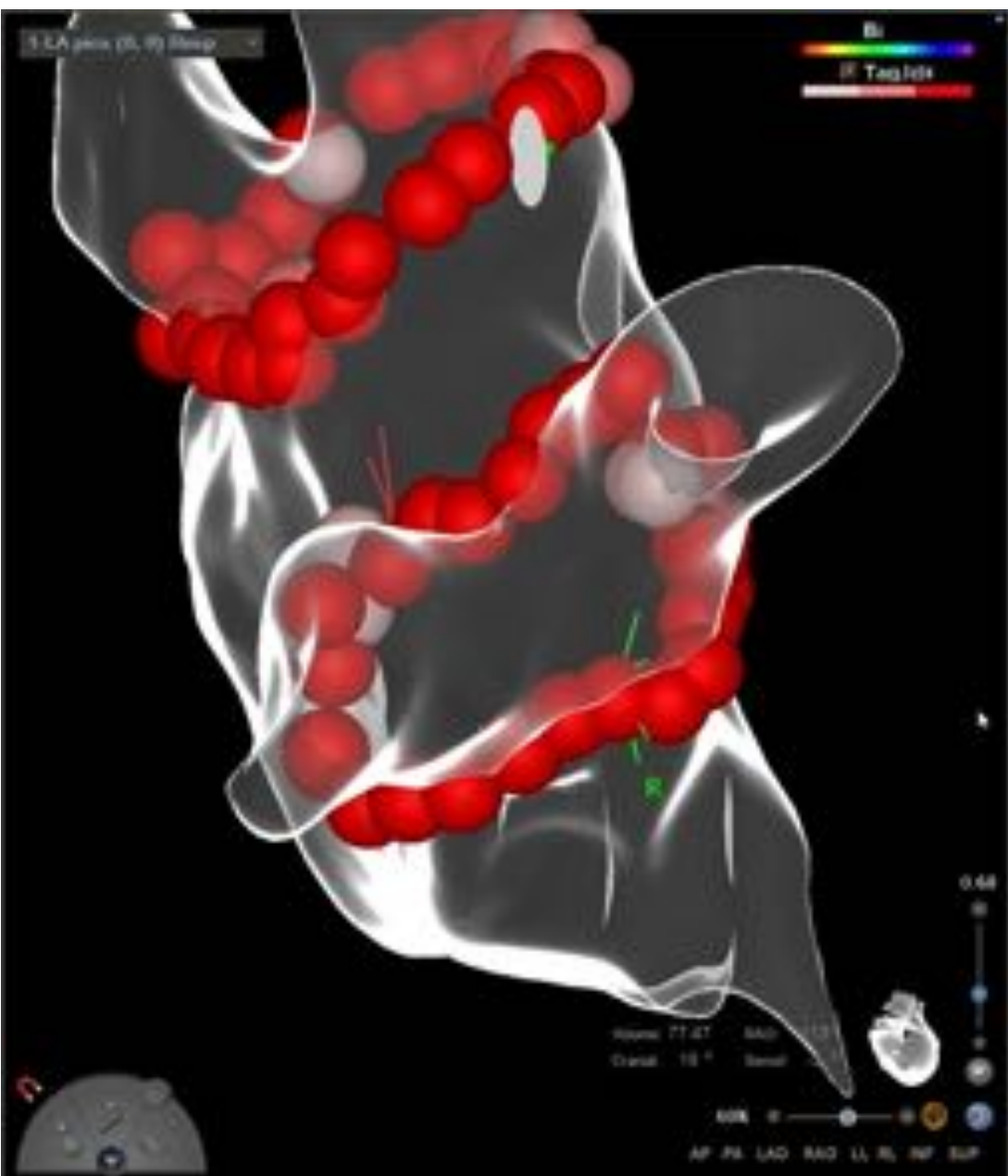


Therapieoptionen

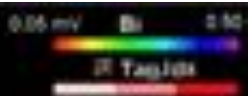
- „Junger“ gesunder Patient, normal strukturiertes Herz
- Sportlich, will keine Medikamente

First-line therapy		
AF catheter ablation for PVI should/may be considered as first-line rhythm control therapy to improve symptoms in selected patients with symptomatic:		
● Paroxysmal AF episodes, ^{240–242,614,615} or	IIa	B
● Persistent AF without major risk factors for AF recurrence. ^{253–255,264,598–601,609,610,633,636,641,724,745,746,832}	IIb	C
as an alternative to AAD class I or III, considering patient choice, benefit, and risk.		
AF catheter ablation:		
● Is recommended to reverse LV dysfunction in AF patients when tachycardia-induced cardiomyopathy is highly probable, independent of their symptom status. ^{646,675,676}	I	B
● Should be considered in selected AF patients with HF with reduced LVEF to improve survival and reduce HF hospitalization. ^{612,659,662–666,668–671,817–826}	IIa	B
AF catheter ablation for PVI should be considered as a strategy to avoid pacemaker implantation in patients with AF-related bradycardia or symptomatic pre-automaticity pause after AF conversion considering the clinical situation. ^{816–818}	IIa	C

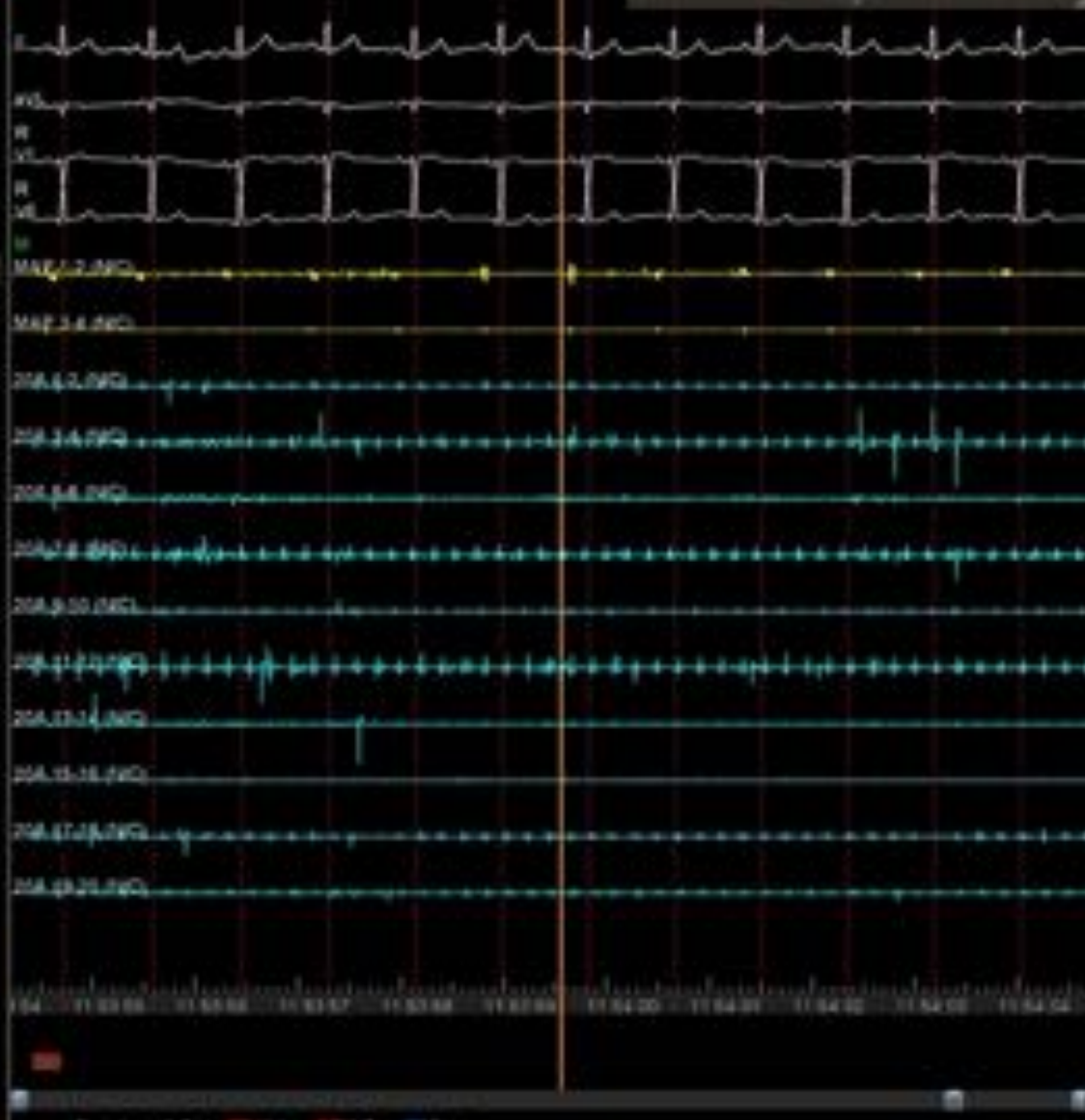
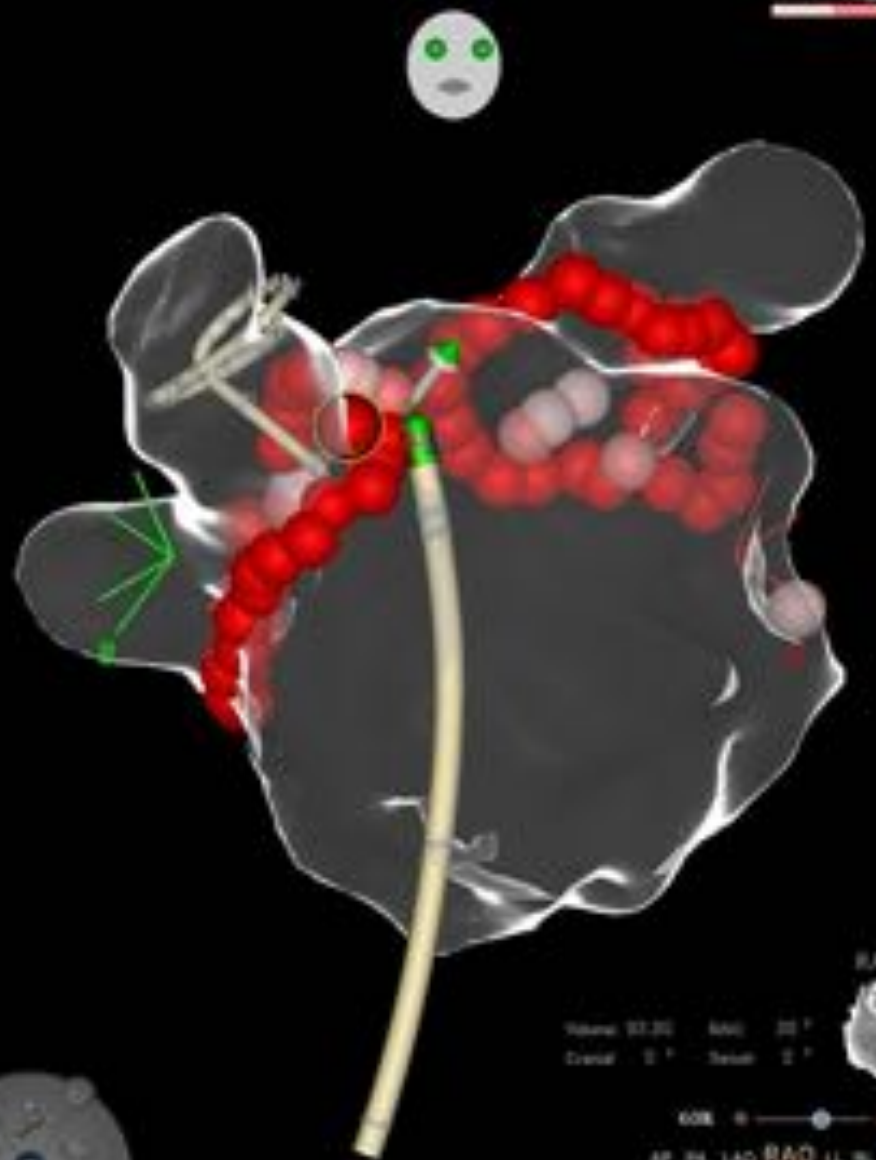




L-LA (S, B) Map



Cl	LAT	Bi	Imp	S
841	-179	0.35	107	8



Volume: 33.30 Area: 20.1
Circum: 2.7 Perim: 2.7
60%
AP PA LAD **RAO** LL PL PP STP

Navigation | Pace | Ablation | PVI Tag | Purify



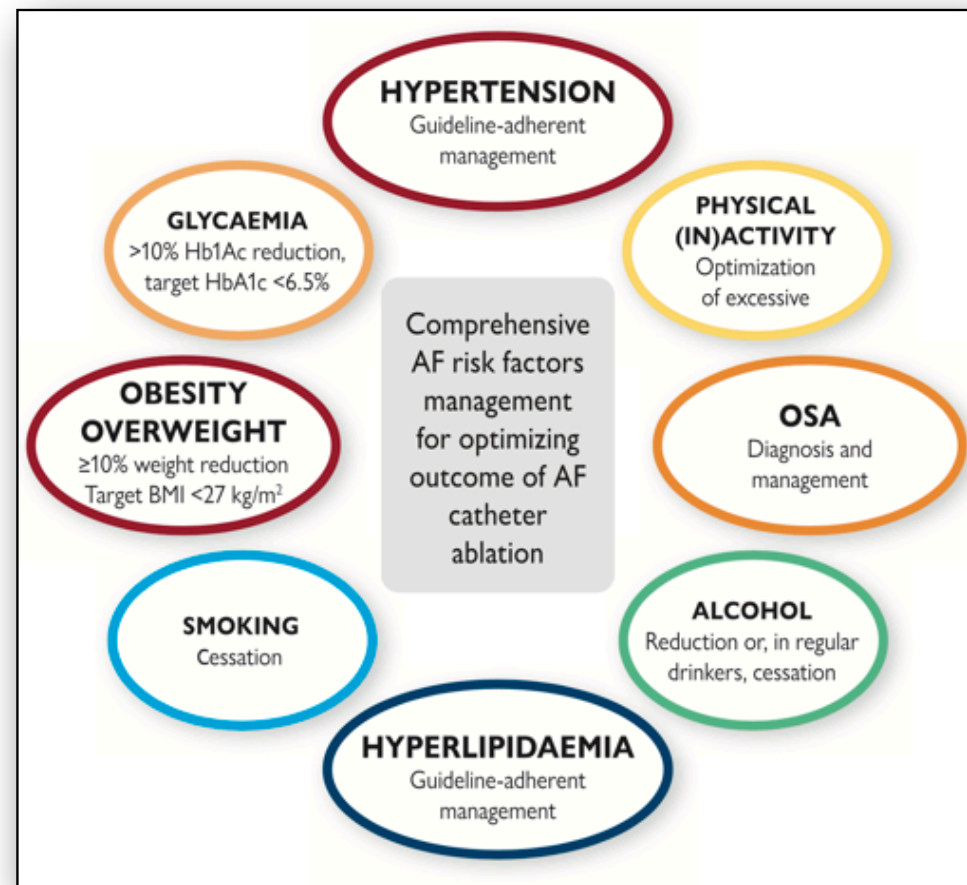
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Therapieoptionen - first line Katheterablation

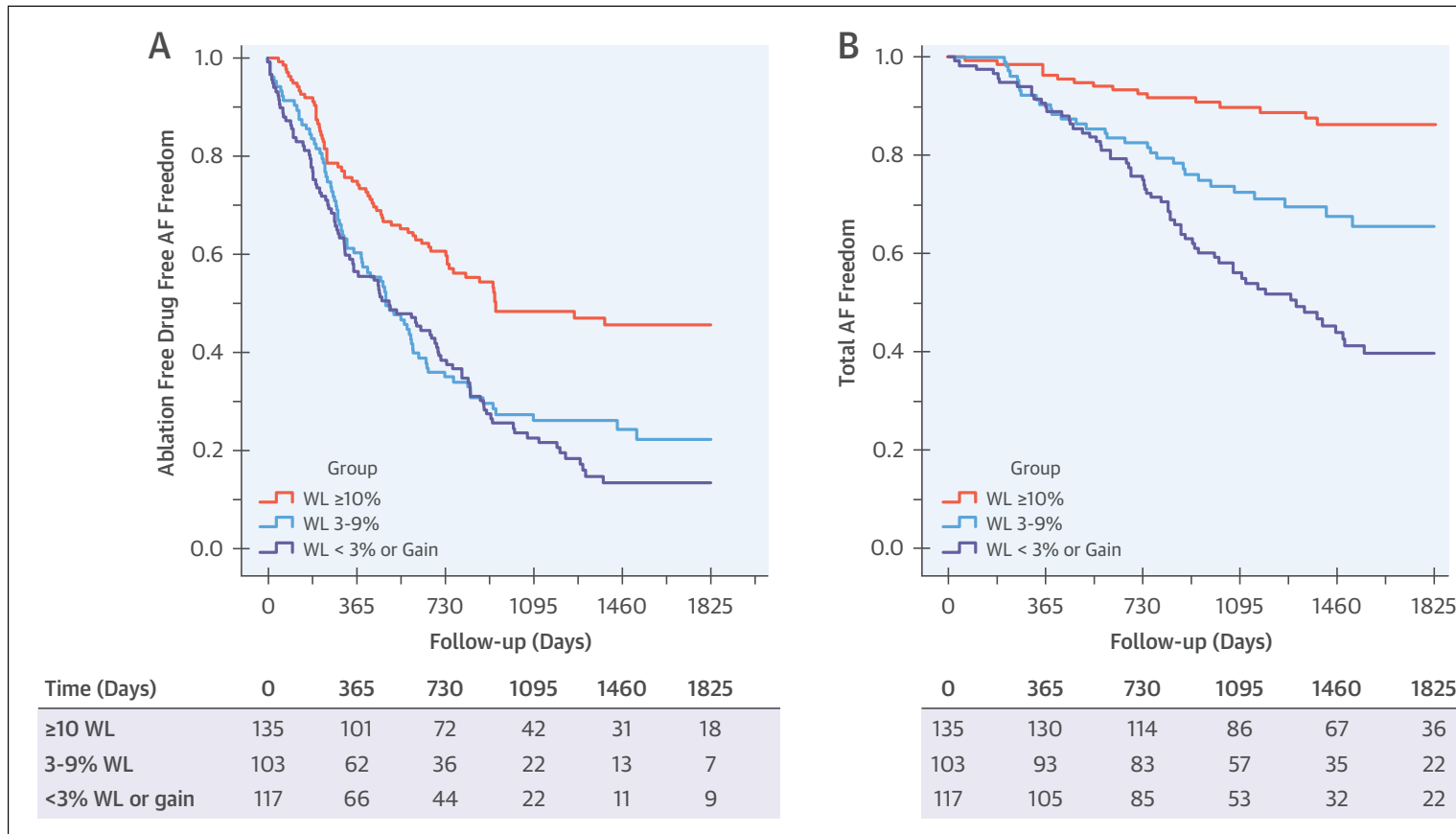
- Hohe Erfolgsquoten
-> Beste „Symptomkontrolle“ aller verfügbaren Therapien
- Routineeingriff
Einstündiger Eingriff, 1 Nacht hospitalisiert, Komplikationen < 1%
- Über 5 Jahre günstigste Therapieoption
- Zukunft:
Reduktion der Morbidität und Mortalität bei frühem Therapiebeginn
(EAST-AFNET 4 Trial, NEJM 2020)

Therapieoptionen -> ABC -> C -> Comorbidities

European Heart Journal (2020) 42, 373-498



Gewicht und VHF - Mehr = mehr





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Take home message

CC To ABC

Confirm AF
A 12-lead ECG or a rhythm strip showing AF pattern for ≥30 s

Characterise AF (the 4S-AF scheme)

- Stroke risk (S)
CHA₂DS₂-VASc score
- Symptom severity (Ss)
NYct, exercise intolerance
- Severity of AF burden (Sb)
Duration, symptoms, symptoms
- Substrate severity (Sd)
Age, comorbidities, structural heart disease

Treat AF: The ABC pathway

- A** Anticoagulation/ Atrial stroke
- B** Better symptom control
- C** Comorbidity/ Cardiovascular risk factor management

- Identify low-risk patients (CHA₂DS₂-VASc 0(m), 1(f))
- Offer stroke prevention if CHA₂DS₂-VASc ≥1(m), ≥2(f)
Assess bleeding risk, address modifiable bleeding risk factors
- Choose OAC (NOAC or VKA with well-managed TTT)

Assess symptoms, QoL and patient's preferences
Optimize rate control
Consider a rhythm control strategy (CV, AADs, ablation)

Comorbidity and cardiovascular risk factors
Lifestyle changes (weight reduction, regular exercise, reduction of alcohol use, etc.)

European Heart Journal (2020) 42, 373-498

- Smartwatch: Patient initiated (or medical professional) cuffless blood pressure cuff
- Smartwatch: Pulse palpation, auscultation
- Smartwatch: Patient initiated photoplethysmogram on smartphone
- Smartwatch: Semi-continuous photoplethysmogram on a smartwatch or wearable
- Smartwatch: Patient initiated (or medical professional) intermittent ECG, rhythm or strip using smartphone or dedicated connectable device
- Smartwatch: Intermittent, smartwatch ECG limited by semi-continuous photoplethysmogram with prompt notification of irregular rhythm or symptoms
- Smartwatch: Wearable belts for continuous recordings
- Smartwatch: Stroke unit/in hospital telemetry monitoring
- Long-term Huber
- 1-2 week continuous ECG patches
- Implantable cardiac monitors

European Heart Journal (2020) 42, 373-498

Comprehensive AF risk factors management for optimizing outcome of AF catheter ablation

- GLYCAEMIA**
>10% HbA1c reduction, target HbA1c <6.5%
- OBESITY OVERWEIGHT**
≥10% weight reduction
Target BMI <27 kg/m²
- SMOKING**
Cessation
- HYPERLIPIDAEMIA**
Guideline-adherent management
- HYPERTENSION**
Guideline-adherent management
- PHYSICAL (IN)ACTIVITY**
Optimization of excessive
- OSA**
Diagnosis and management
- ALCOHOL**
Reduction or, in regular drinkers, cessation

European Heart Journal (2020) 42, 373-498

