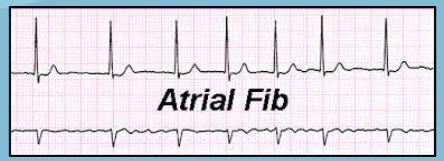
Lignes directrices canadiennes 2020 pour le traitement de la fibrillation auriculaire

Dr Jean-François Sarrazin, MD, FRCPC, FACC, FHRS

18 novembre 2021



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Conflits d’intérêts

- Conférencier: - Bristol-Myers Squibb
- Consultant: - Abbott
  - Biosense Webster
- Projets de recherche: - Abbott
  - Biosense Webster
  - Boston Scientific
  - Medtronic

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Objectifs

1) Connaître les nouveautés en détection de la fibrillation auriculaire (FA).
2) Revoir les recommandations sur l'anticoagulation chez les patients avec FA.
3) Maîtriser la prise en charge et le contrôle du rythme chez les patients avec FA.

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Canadian Journal of Cardiology 36 (2020) 1847–1948

Society Guidelines

The 2020 Canadian Cardiovascular Society/Canadian Heart Rhythm Society Comprehensive Guidelines for the Management of Atrial Fibrillation

Jason G. Andrade, MD, (Co-chair),[a,b] Martin Aguilar, MD, PhD,[b] Clare Atzema, MD, MSc,[c] Alan Bell, MD,[c] John A. Cairns, OBC, MD,[a] Christopher C. Cheung, MD, MPH,[a] Jafna L. Cox, MD,[d] Paul Dorian, MD, MSc,[c] David J. Gladstone, MD, PhD,[c] Jeff S. Healey, MD,[e] Paul Khairy, MD, PhD,[b] Kori Leblanc, ACPR, PharmD,[c] M. Sean McMurtry, MD, PhD,[f] L. Brent Mitchell, MD,[g] Girish M. Nair, MBBS, MSc,[h] Stanley Nattel, MD,[b] Ratika Parkash, MD,[d] Louise Pilote, MD, MPH, PhD,[i] Roopinder K. Sandhu, MD,[f] Jean-François Sarrazin, MD,[j] Mukul Sharma, MD, MSc,[k] Allan C. Skanes, MD,[l] Mario Talajic, MD,[m] Teresa S.M. Tsang, MD,[a] Atul Verma, MD,[n] Subodh Verma, MD, PhD,[c] Richard Whitlock, MD, PhD,[e] D. George Wyse, MD, PhD,[g] and Laurent Macle, MD, (Co-chair);[b] and Members of the Secondary Panel*

- **80 241 mots**
- **130 recommandations**
- **885 références**

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Classification de la fibrillation auriculaire (FA)

Table 4 **Classification of AF**

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.

2020 ESC AF Guidelines.
Eur Heart J 2021;42(5):373-498.

FA sous-clinique: FA asymptomatique de courte durée détectée par un enregistrement continu de longue durée (i.e. stimulateur cardiaque).

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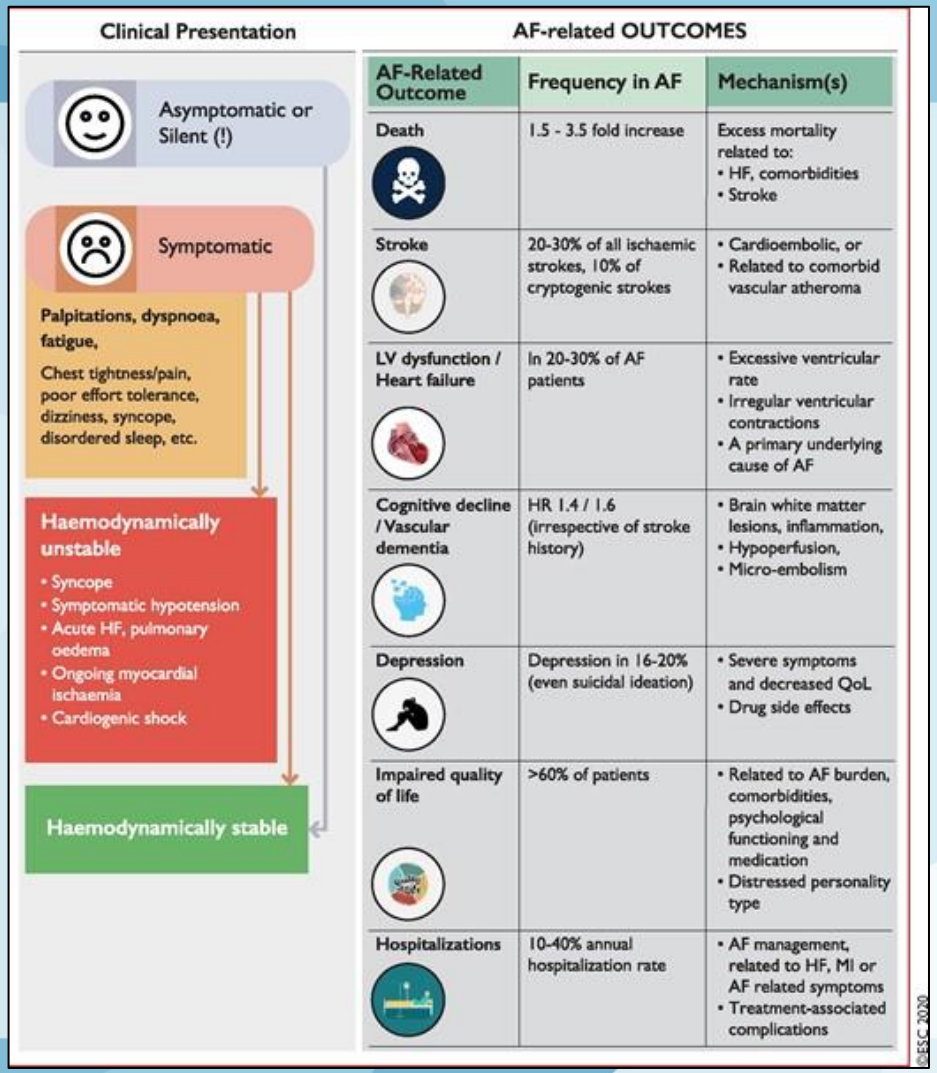

2020 ESC AF Guidelines.
Eur Heart J 2021;42(5):373-498.

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DÉPISTAGE DE LA FIBRILLATION AURICULAIRE

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Pourquoi le dépistage de la FA?

- La FA est souvent asymptomatique.
- La FA est souvent intermittente et imprévisible.
- La FA peut être d’une durée courte (fardeau faible).
- La FA intermittente et asymptomatique a des conséquences importantes de morbidité et de mortalité.

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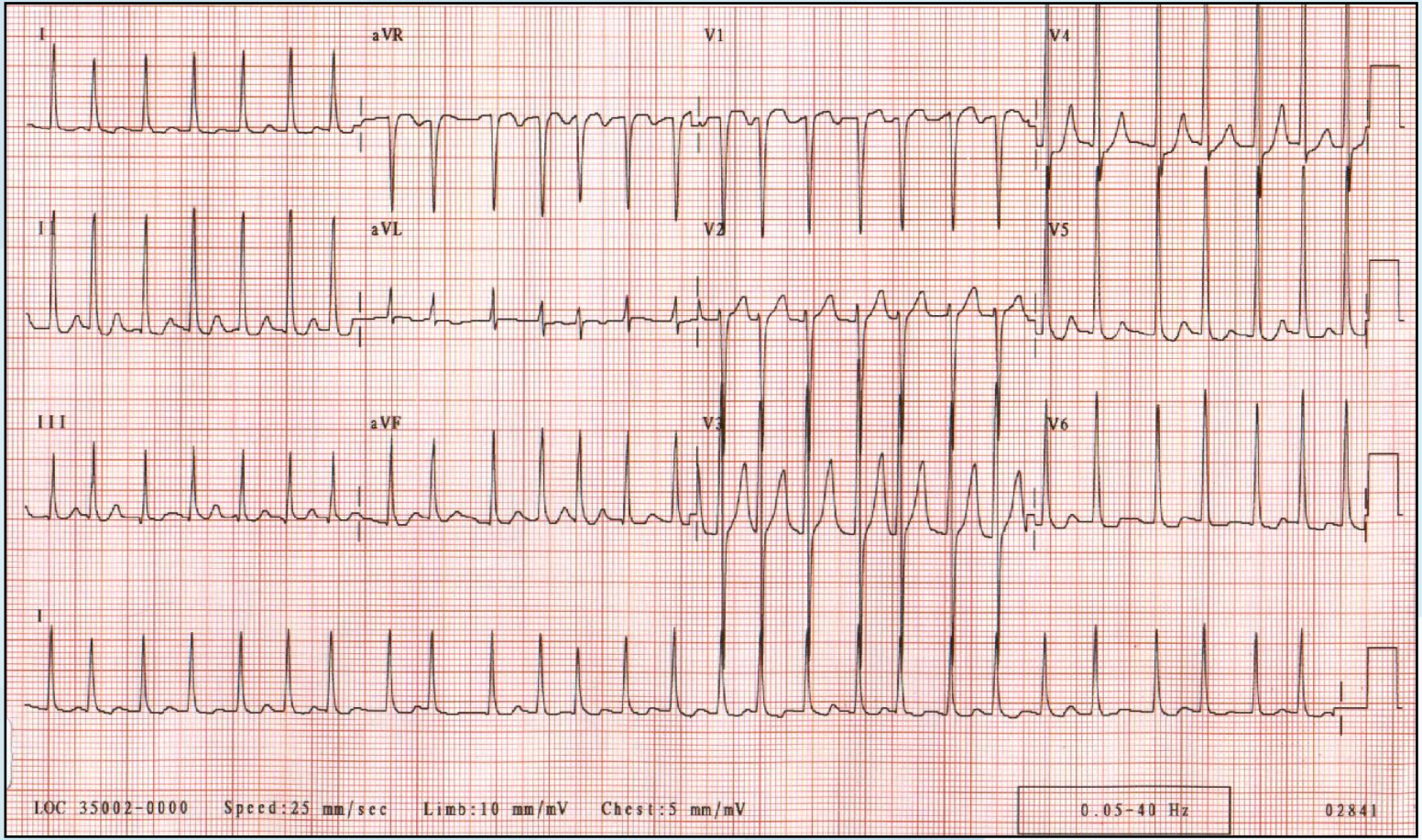
ECG – rendement diagnostique faible (2%)



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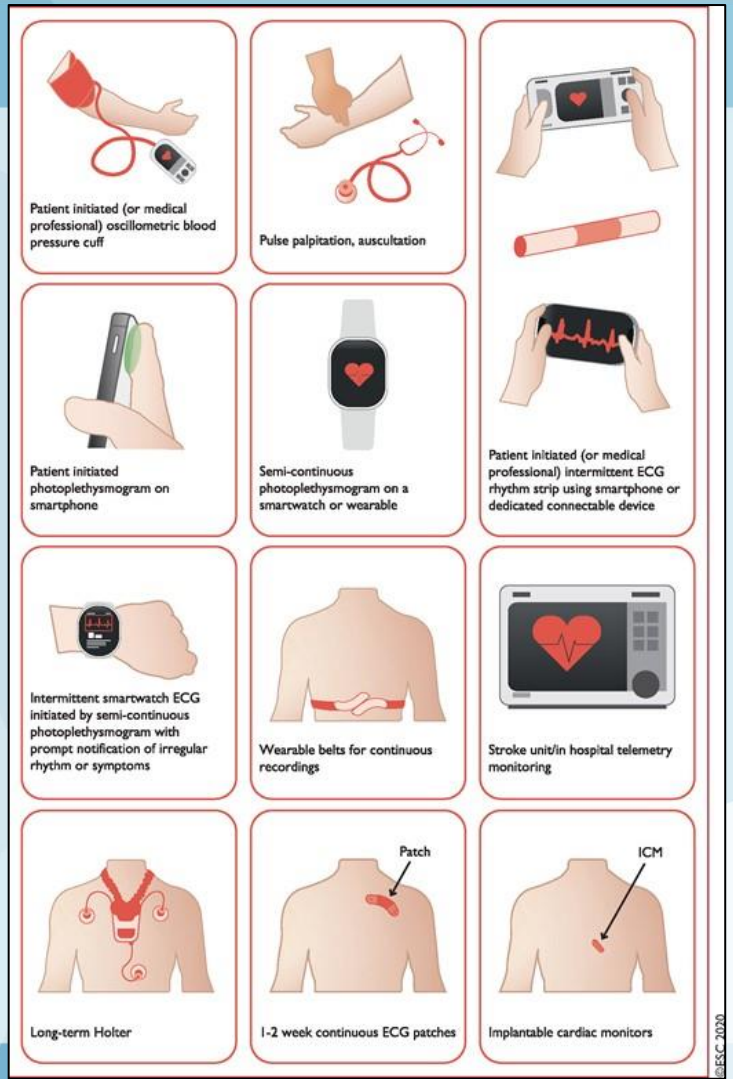
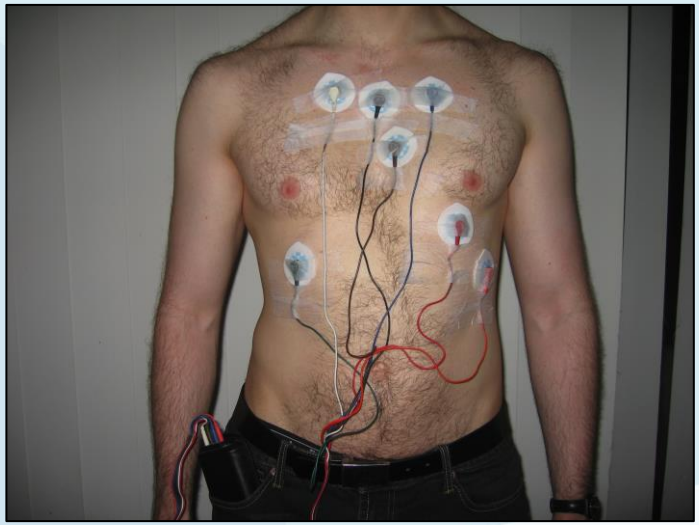
Outils diagnostics pour détecter la FA



2020 ESC AF Guidelines. Eur Heart J 2021;42(5):373-498.

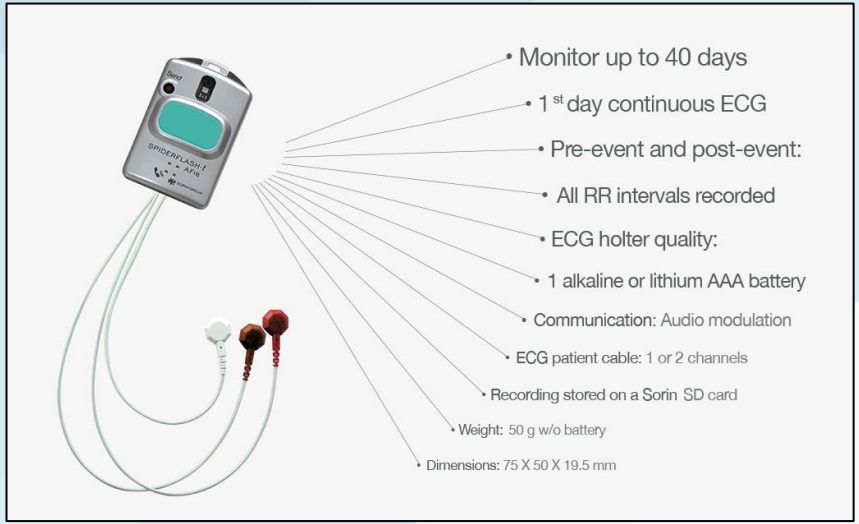
Holter

- Plusieurs électrodes avec information sur 2-3 dérivées.
- Indications:
  - Patients avec symptômes fréquents.
  - Quantification précise des arythmies.
- Points positifs:
  - Enregistrement complet pour 24 à 48 heures.
  - Graphiques de la fréquence cardiaque en FA.
  - Fardeau d'arythmie.
- Points négatifs:
  - Courte durée.
  - Nécessite retrait du Holter pour analyse et résultats parfois tardifs.
- Sensibilité diagnostique:
  - Faible sensibilité pour les symptômes intermittents ou la syncope (<5% à 13%).



Moniteur d'événements (Spider Flash)

- Enregistrement avec un algorithme de détection automatique:
  - Rythme irrégulièrement irrégulier.
  - FC lente et rapide.
- Activation automatique et par le patient.
- Sensibilité = 36%.



Moniteur d'événements (déclenché par le patient)

- Téléphone intelligent avec application Kardia (AliveCor).
  - Excellente sensibilité.
  - Points négatifs
    - Manque les arythmies de courte durée.
    - Coût = 99$ (1 dérivée) à 179$ (6 dérivées).

- Apple Watch avec app ECG (à partir de la série 4).
  - Sensibilité >90%.
  - Coût = À partir de 529$.

- Fitbit

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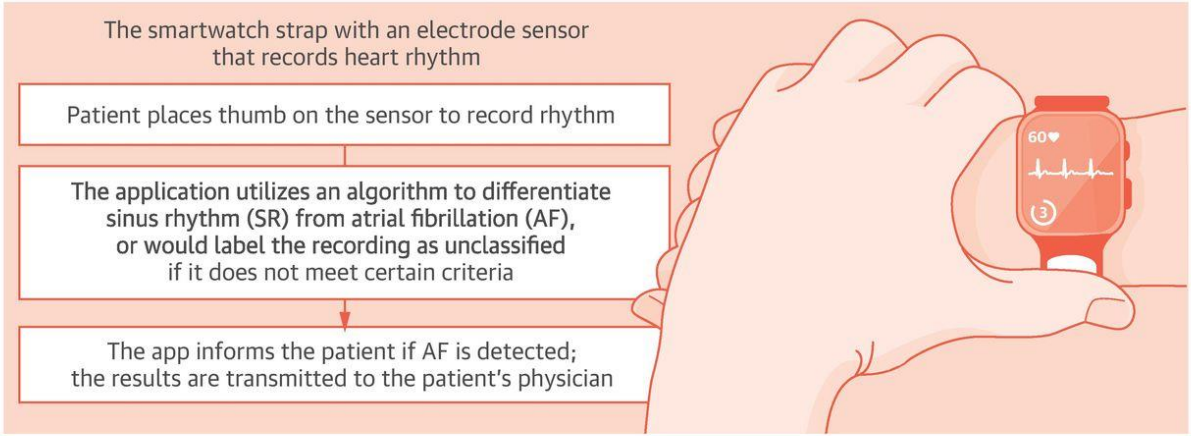
CENTRAL ILLUSTRATION: Automated Atrial Fibrillation Detection Algorithm Using Novel Smartwatch Technology



Method for interpreting the recording:	% of patients with interpretable results	Accuracy of AF diagnosis compared to 12 lead electrocardiogram
App algorithm only	66%	93% sensitivity; 84% specificity
Physician only	87%	99% sensitivity; 83% specificity
Recordings labeled as "unclassified" by the app algorithm when reviewed by physician	100% (35%)	100% sensitivity; 80% specificity

Bumgarner, J.M. et al. J Am Coll Cardiol. 2018;71(21):2381-8.

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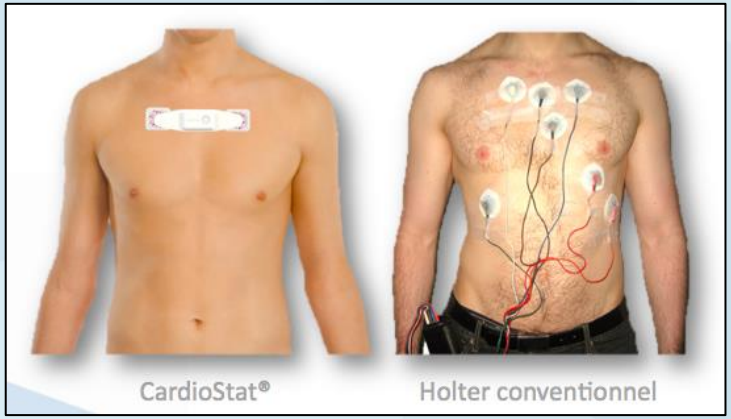
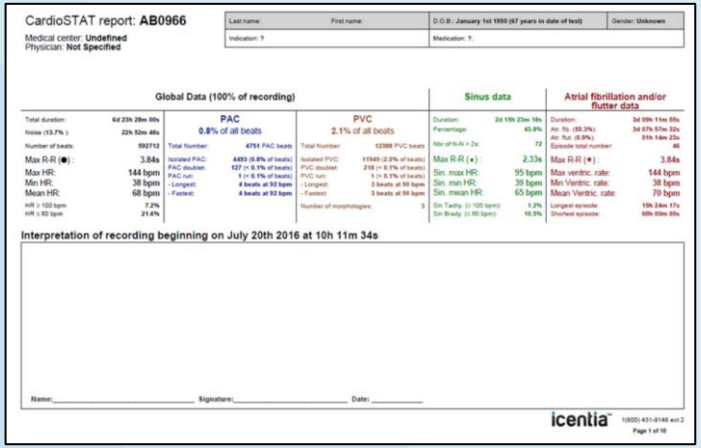
Moniteur d'événements (CardioSTAT)




CardioSTAT report: **AB0966**

Medical center: **Undefined**
Physician: **Not Specified**

Last name:	First name:	D.O.B.: January 1st 1950 (67 years in date of test)	Gender: Unknown
Indication: ?		Medication: ?.	

Global Data (100% of recording)

		PAC		PVC		Sinus data		Atrial fibrillation and/or flutter data	
Total duration:	6d 23h 29m 00s	0.8% of all beats		2.1% of all beats		Duration:	2d 15h 23m 18s	Duration:	3d 09h 11m 58s
Noise (13.7%):	22h 52m 46s					Percentage:	43.8%	Atr. fib. (50.3%):	3d 07h 57m 32s
								Atr. flut. (0.9%):	01h 14m 23s
Number of beats:	592712	Total Number:	4751 PAC beats	Total Number:	12388 PVC beats	Nbr of N-N > 2s:	72	Episode total number:	46
Max R-R (●):	3.84s	Isolated PAC:	4493 (0.8% of beats)	Isolated PVC:	11949 (2.0% of beats)	Max R-R (●):	2.33s	Max R-R (●):	3.84s
Max HR:	144 bpm	PAC doublet:	127 (< 0.1% of beats)	PVC doublet:	218 (< 0.1% of beats)				
Min HR:	38 bpm	PAC run:	1 (< 0.1% of beats)	PVC run:	1 (< 0.1% of beats)	Sin. max HR:	95 bpm	Max ventric. rate:	144 bpm
Mean HR:	68 bpm	- Longest:	4 beats at 92 bpm	- Longest:	3 beats at 99 bpm	Sin. min HR:	39 bpm	Min Ventric. rate:	38 bpm
		- Fastest:	4 beats at 92 bpm	- Fastest:	3 beats at 99 bpm	Sin. mean HR:	65 bpm	Mean Ventric. rate:	70 bpm
HR ≥ 100 bpm	7.3%			Number of morphologies:	3	Sin Tachy. (≥ 100 bpm):	1.2%	Longest episode:	15h 24m 17s
HR ≤ 60 bpm	21.6%					Sin Brady. (≤ 60 bpm):	10.5%	Shortest episode:	00h 00m 05s

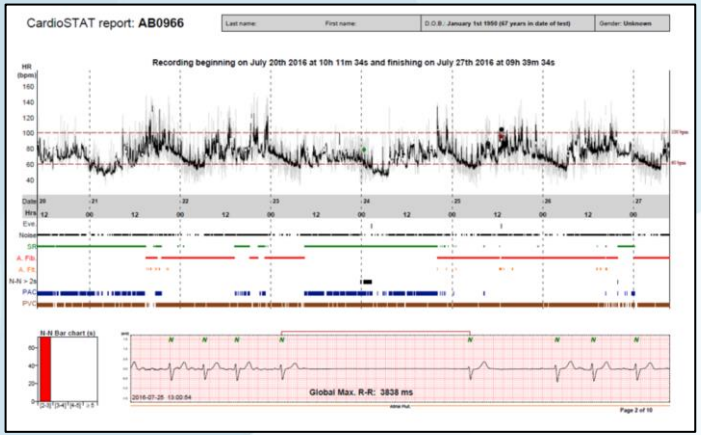
Interpretation of recording beginning on July 20th 2016 at 10h 11m 34s

Name:_____ Signature:_____ Date:_____

icentia 1(800) 431-9148 ext 2

Page 1 of 10

CardioSTAT® est un appareil à usage unique permettant un enregistrement ECG en continu de 7 jours


CardioSTAT report: **AB0966**

Last name:	First name:	D.O.B.: January 1st 1950 (67 years in date of test)	Gender: Unknown

Recording beginning on July 20th 2016 at 10h 11m 34s and finishing on July 27th 2016 at 09h 39m 34s

HR (bpm)

Global Max. R-R: 3838 ms

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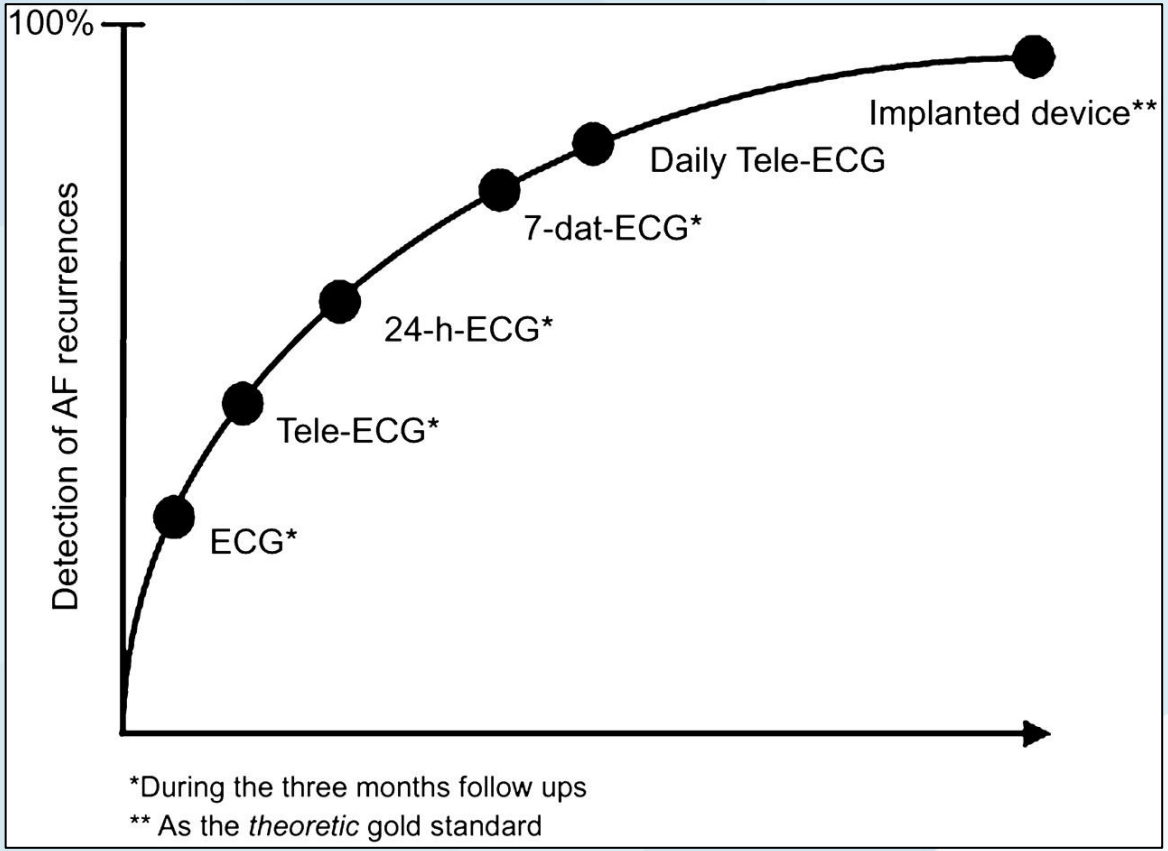
Détection de la FA



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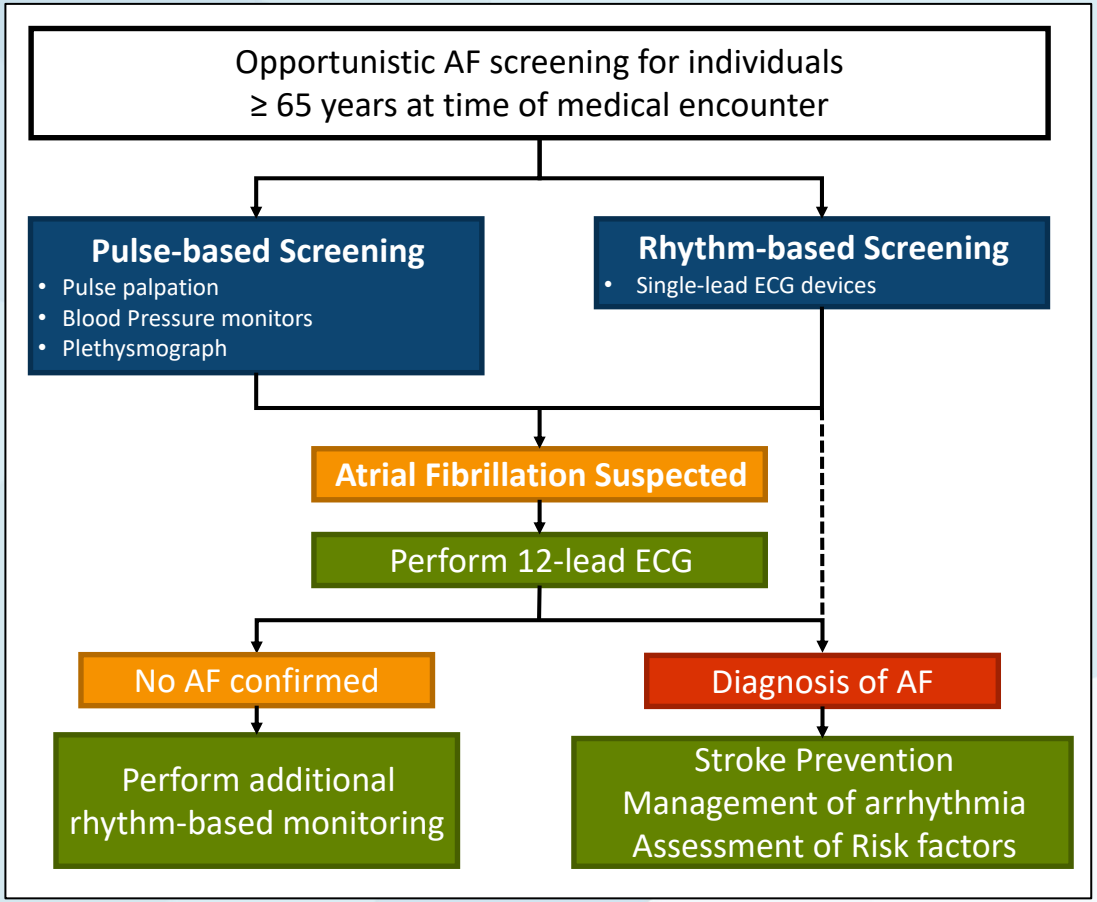
Détection opportuniste de la FA

« Number needed to screen » = 69.



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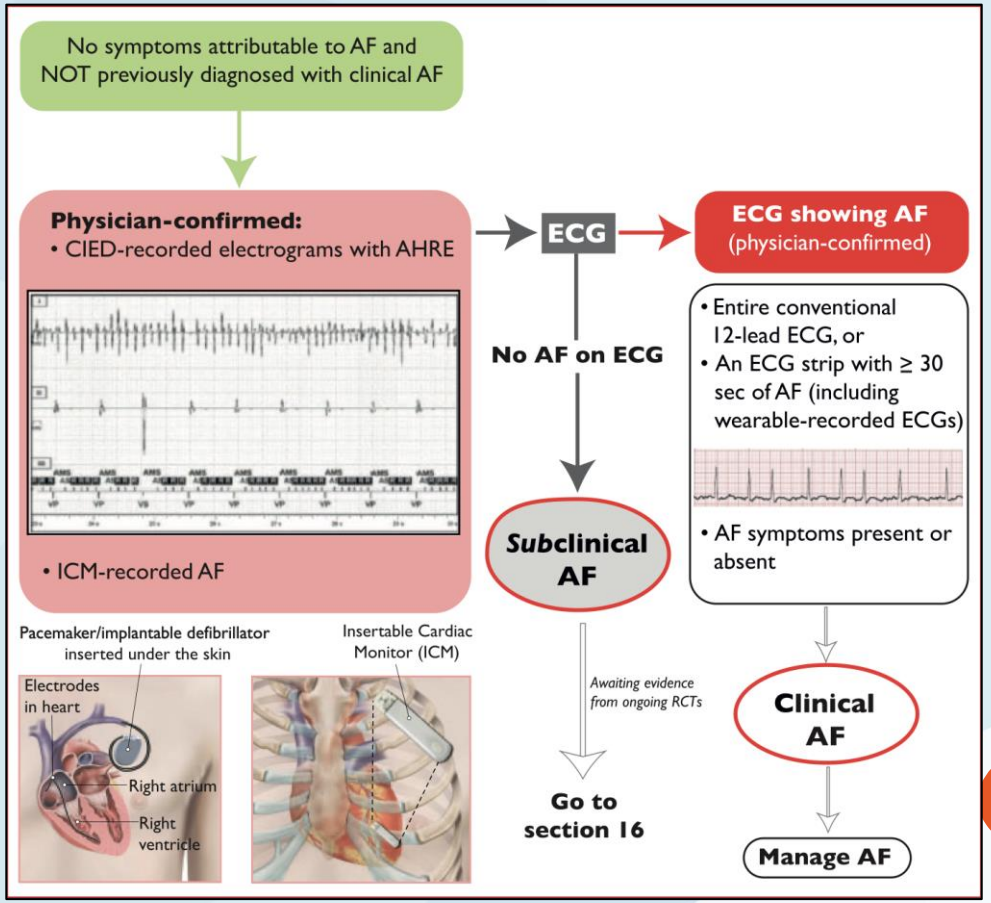
Andrade JG, Sarrazin JF et al. 2020 CCS/CHRS Guidelines on Management of AF. Can J Cardiol 2020;36(12):1847-948.

FA sous-clinique (SCAF)



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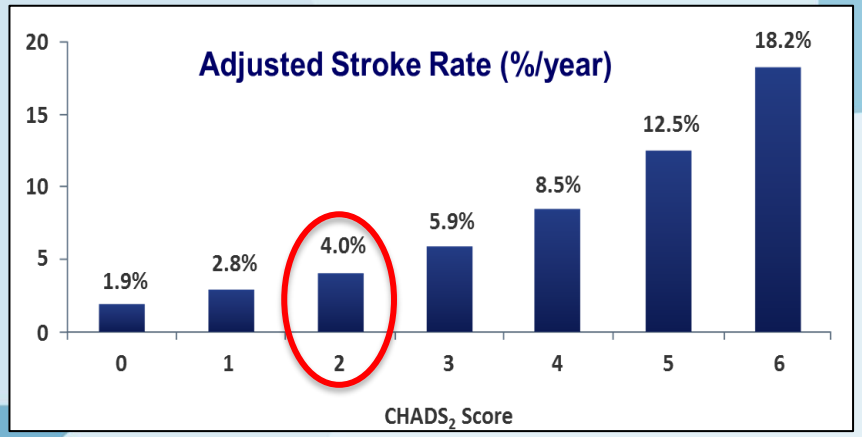
2020 ESC AF Guidelines. Eur Heart J 2021;42(5):373-498.

FA sous-clinique (SCAF)

Year	Trial	Number of patients	Duration of follow-up	Atrial rate cut-off	AF burden threshold	Hazard ratio for TE event	TE event rate (below vs. above AF burden threshold)
2003	Ancillary MOST[5]	312	27 months (median)	>220 bpm	5 min	6.7 (*P*=0.020)	3.2% overall (1.3% vs. 5%)
2005	Italian AT500 Registry[18]	725	22 months (median)	>174 bpm	24 h	3.1 (*P*=0.044)	1.2% annual rate
2009	Botto *et al.*[19]	568	1 year (mean)	>174 bpm	$CHADS_2$+AF burden	n/a	2.5% overall (0.8% vs. 5%)
2009	TRENDS[20]	2486	1.4 years (mean)	>175 bpm	5.5 h	2.2 (*P*=0.060)	1.2% overall (1.1% vs. 2.4%)
2012	Home Monitor CRT[22]	560	370 days (median)	>180 bpm	3.8 h	9.4 (*P*=0.006)	2.0% overall
2012	ASSERT[7]	2580	2.5 years (mean)	>190 bpm	6 min	2.5 (*P*=0.007)	(0.69% vs. 1.69%)
2014	SOS AF[23]	10016	2 years (median)	>175 bpm	1 h	2.11 (*P*=0.008)	0.39% per year Overall

- Relation entre épisodes auriculaires rapides (AHRE) et événements thromboemboliques.
- Risque augmenté mais plus faible que si FA clinique documentée.



Anticoagulation et FA sous-clinique

- Anticoagulation
  - Risque-bénéfice incertain (patients plus âgés et à plus haut risque de saignement).
  - Recommandations actuelles:
    - ≥ 65 ans ou $CHADS_2 \geq 1 \Longrightarrow$ anticoagulation si SCAF > 24 heures.
    - Haut risque (i.e. AVC récent d'étiologie imprécise)
      - Anticoagulation possible avec épisodes plus courts.

- Études à venir
  - ARTESIA: Apixaban vs ASA avec SCAF 6 min à 24 heures (recrutement terminé).
  - NOAH: Edoxaban vs ASA chez patients avec SCAF.

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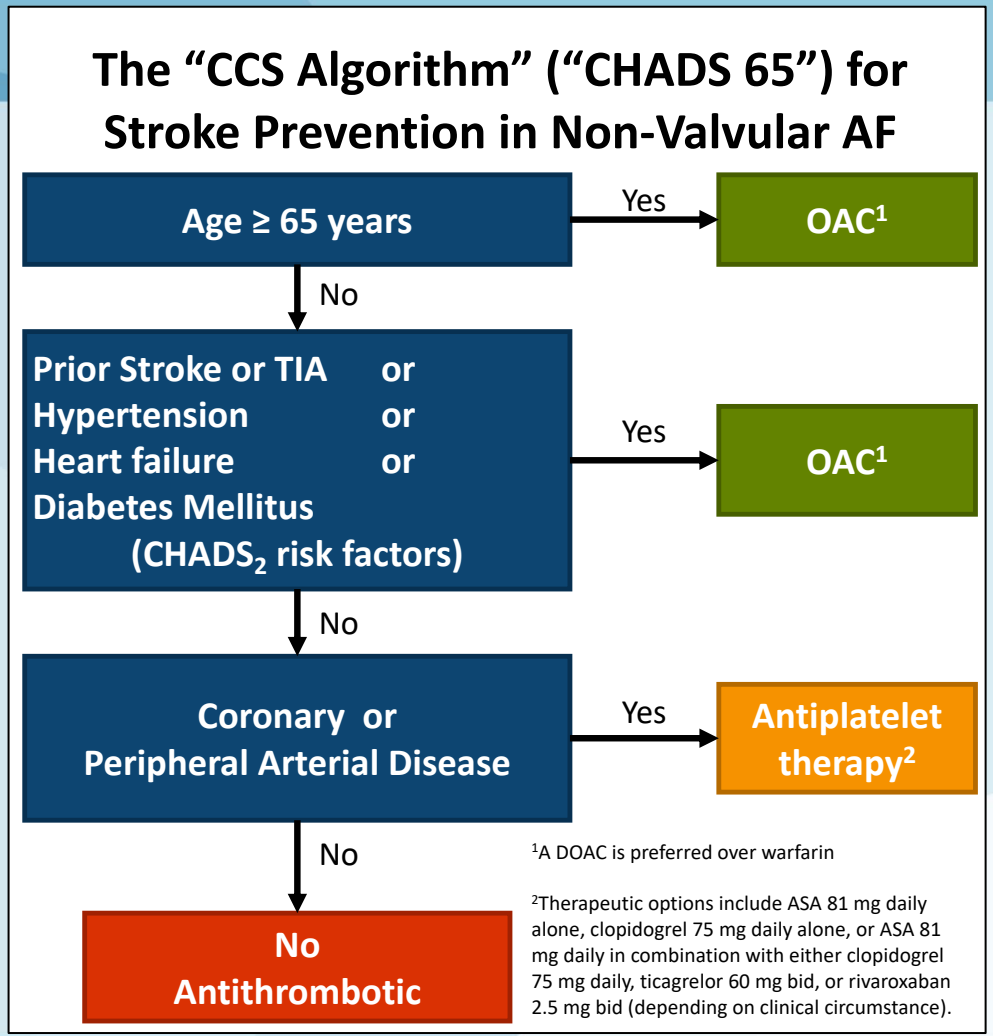
Âge facile à déterminer pour tous les patients.

Warfarine pour les prothèses valvulaires mécaniques et les sténoses mitrales modérées à sévères.



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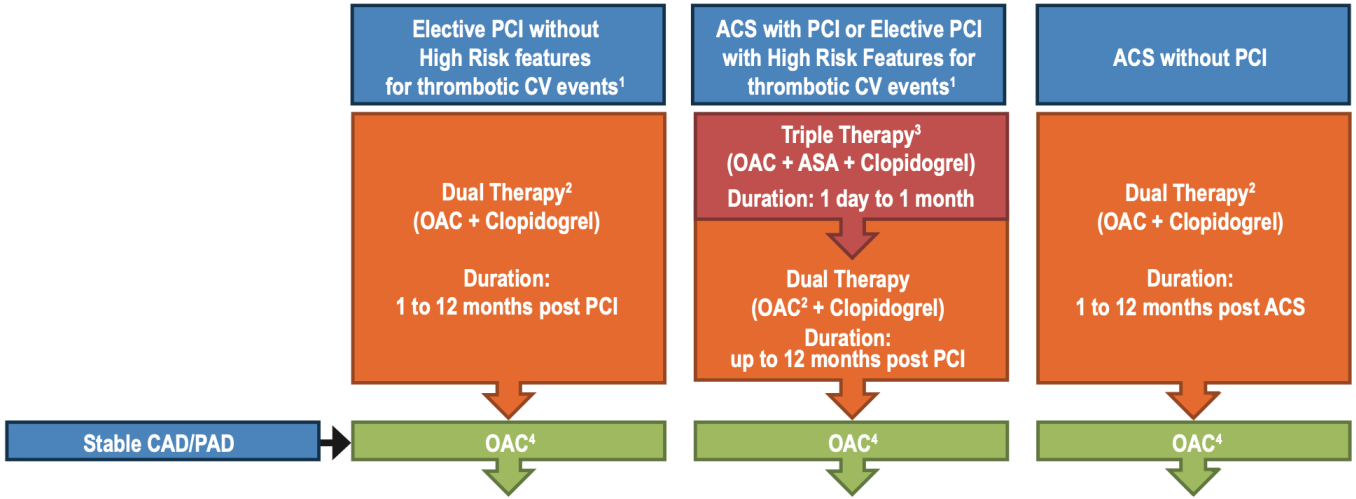
FA et MCAS

AF Patients with Coronary or Peripheral Arterial Disease and an Indication for OAC (Age ≥ 65 or $CHADS_2$ ≥ 1)



1. PCI is considered high-risk based on clinical and angiographic features such as: diabetes mellitus, current smoker, chronic renal dysfunction (eGFR < 60 mL/min), prior ACS, multi-vessel disease, multiple stents implanted, complex bifurcation lesion, total stent length > 60 mm, prior stent thrombosis, chronic total occlusion intervention, or bioabsorbable vascular scaffold.
2. The OAC component evaluated as part of dual pathway therapy regimens include: warfarin daily, apixaban 5 mg BID (reduced to 2.5 mg if they met two or more of the following dose-reduction criteria: age > 80 years of age, weight < 60 kg, or Cr > 133 µmol per liter), dabigatran 110 mg or 150 mg PO BID, edoxaban 60 mg PO daily (30 mg in patients with CrCl 15–50 mL/min, bodyweight ≤ 60 kg, or concomitant use of specified potent P-glycoprotein inhibitors), rivaroxaban 15 mg PO daily (10 mg in patients with CrCl 30-50 mL/min). A DOAC is preferred over warfarin, however if warfarin is to be used the lower end of the recommended INR target range is preferred. All patients should receive a loading dose of ASA 160 mg at the time of PCI (if previously ASA naïve).
3. The OAC component evaluated as part of triple therapy regimens include: warfarin daily, rivaroxaban 2.5 mg PO BID, or apixaban 5 mg BID (reduced to 2.5 mg if they met two or more of the following dose-reduction criteria: age > 80 years of age, weight < 60 kg, or Cr > 133 µmol per liter). A DOAC is preferred over warfarin, however if warfarin is to be used the recommended INR target is 2.0-2.5. All patients should receive a loading dose of ASA 160 mg at the time of PCI (if previously ASA naïve). Thereafter, ASA may be discontinued as early as the day following PCI or I can be continued longer. The timing of when to discontinue ASA will depend on individual patient's ischemic and bleeding risk.
4. The dose of OAC beyond one year after PCI should be standard stroke prevention doses. A combination of an OAC and single antiplatelet therapy may be used only in highly-selected patients with high-risk features for ischemic coronary outcomes, and who are also at low risk of bleeding

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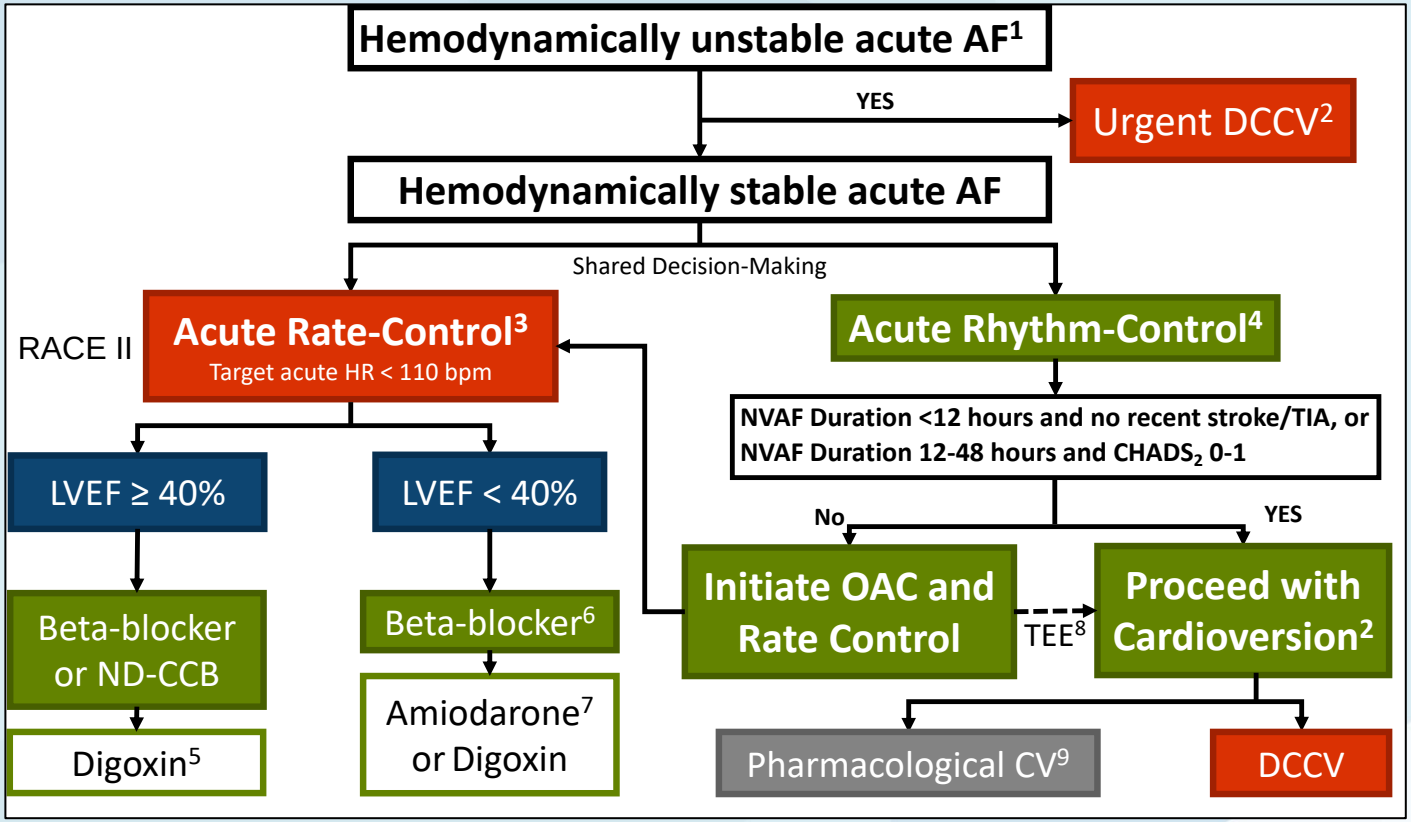
Traitement de la FA ou flutter auriculaire (aigu)



FinCV studies
- Augmentation du risque si 12-48h.
- Risque plus faible si anticoagulation.
- Risque surtout si CHA_2DS_2-VASc ≥ 2.

Anticoagulation pour 4 semaines pour tous, puis selon score CHADS-65.

Procainamide IV, Vernakalant IV, FlécaInide ou Propafenone PO

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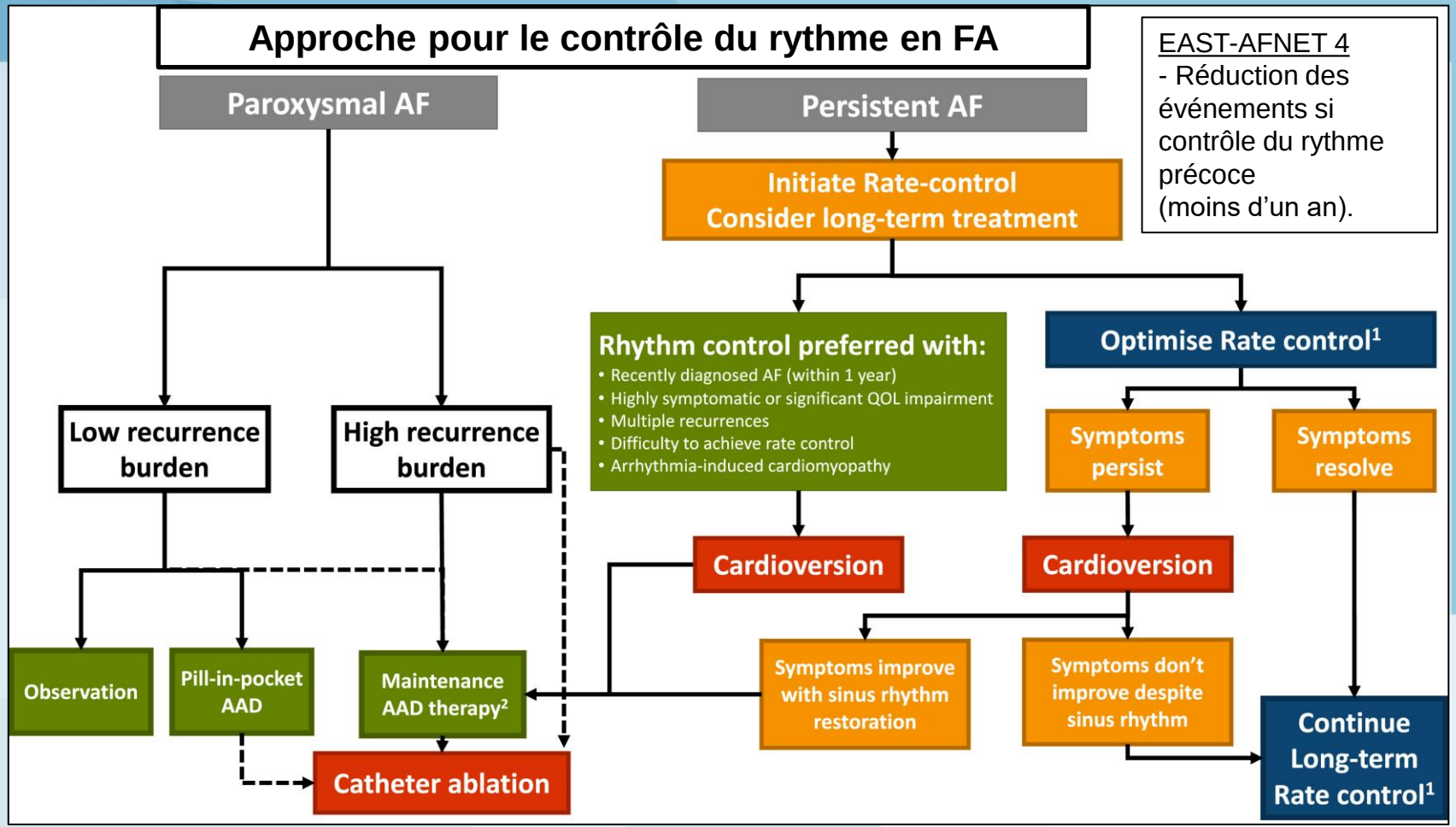
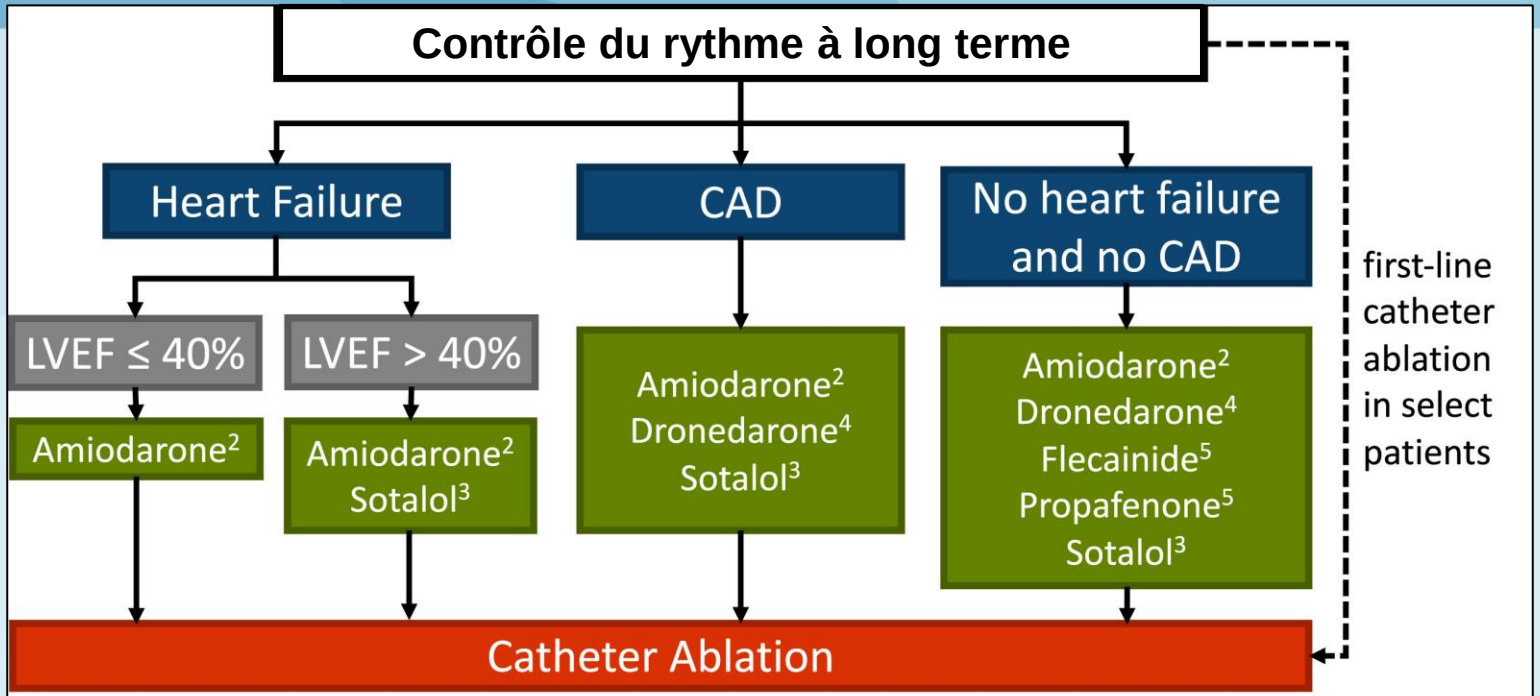
Approche pour le contrôle du rythme en FA



EAST-AFNET 4
- Réduction des événements si contrôle du rythme précoce (moins d'un an).

Andrade JG, Sarrazin JF et al. 2020 CCS/CHRS Guidelines on Management of AF. Can J Cardiol 2020;36(12):1847-948.



[1]Consider AF symptom burden, possibility of adverse drug reactions and patient preference
[2]Consider alternative AADs or ablation rather than long-term amiodarone (significant risk of extra-cardiac side-effects)
[3]Sotalol should be used with caution in patients with high-risk features for torsade de pointes (≥ 65 years, women, reduced renal function, concomitant potassium-wasting diuretics). Sotalol is not recommended for patients with left ventricular hypertrophy.
[4]Dronedarone should be used with caution in combination with digoxin
[5]Class IC agent should be combined with AV-nodal blocking agent. Use caution for patients with left ventricular hypertrophy.

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Initiation de la FA

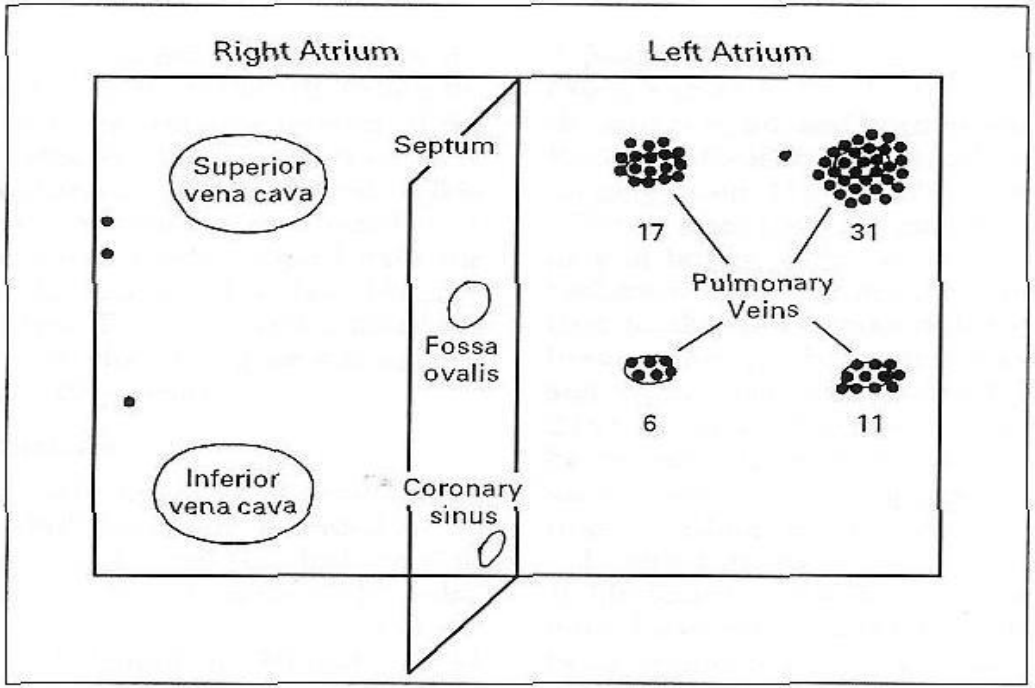

Figure 1. Diagram of the Sites of 69 Foci Triggering Atrial Fibrillation in 45 Patients.
Note the clustering in the pulmonary veins, particularly in both superior pulmonary veins. Numbers indicate the distribution of foci in the pulmonary veins.

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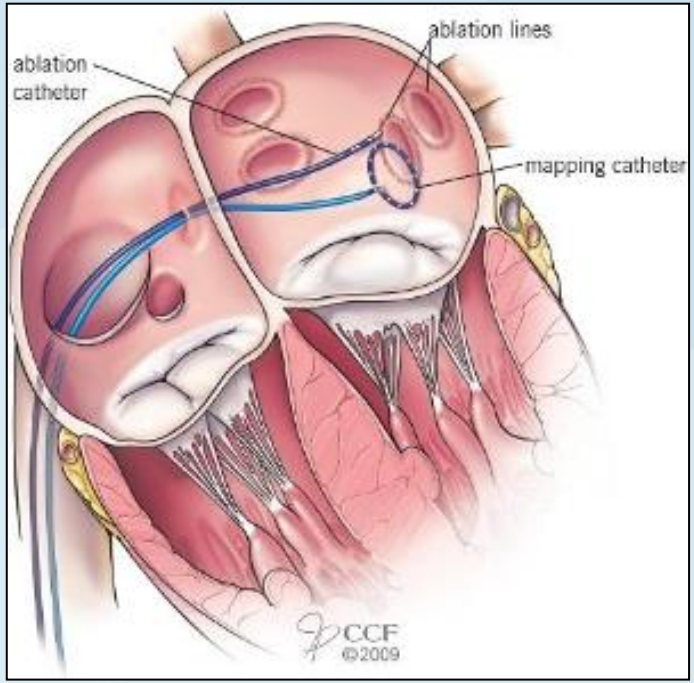
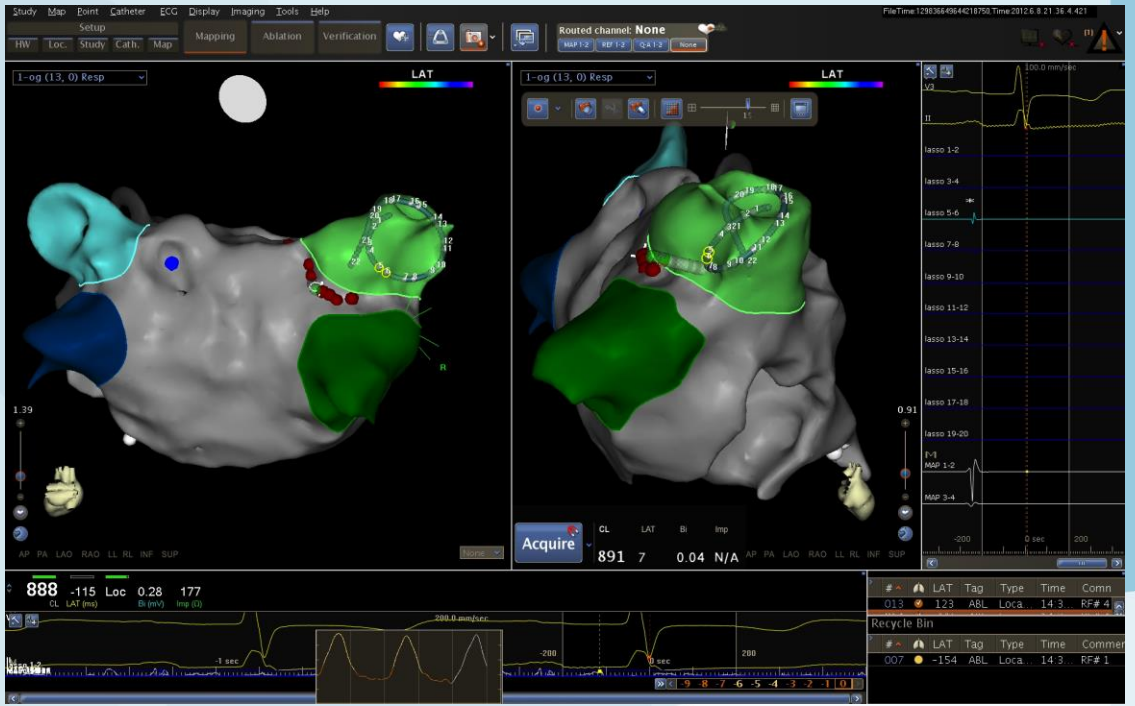
Haissaguerre et al. NEJM 1998;339:659-66.

Ablation de FA





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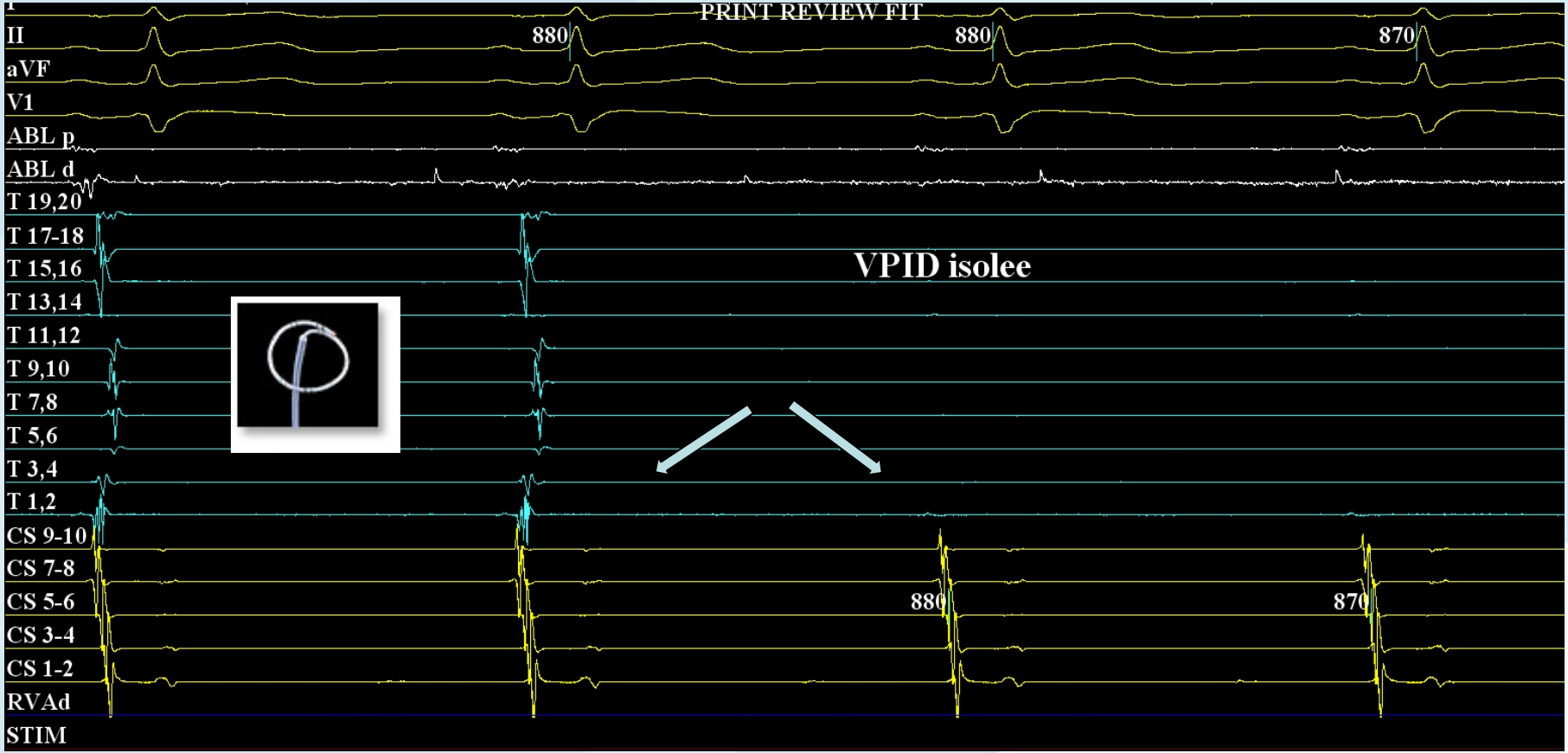
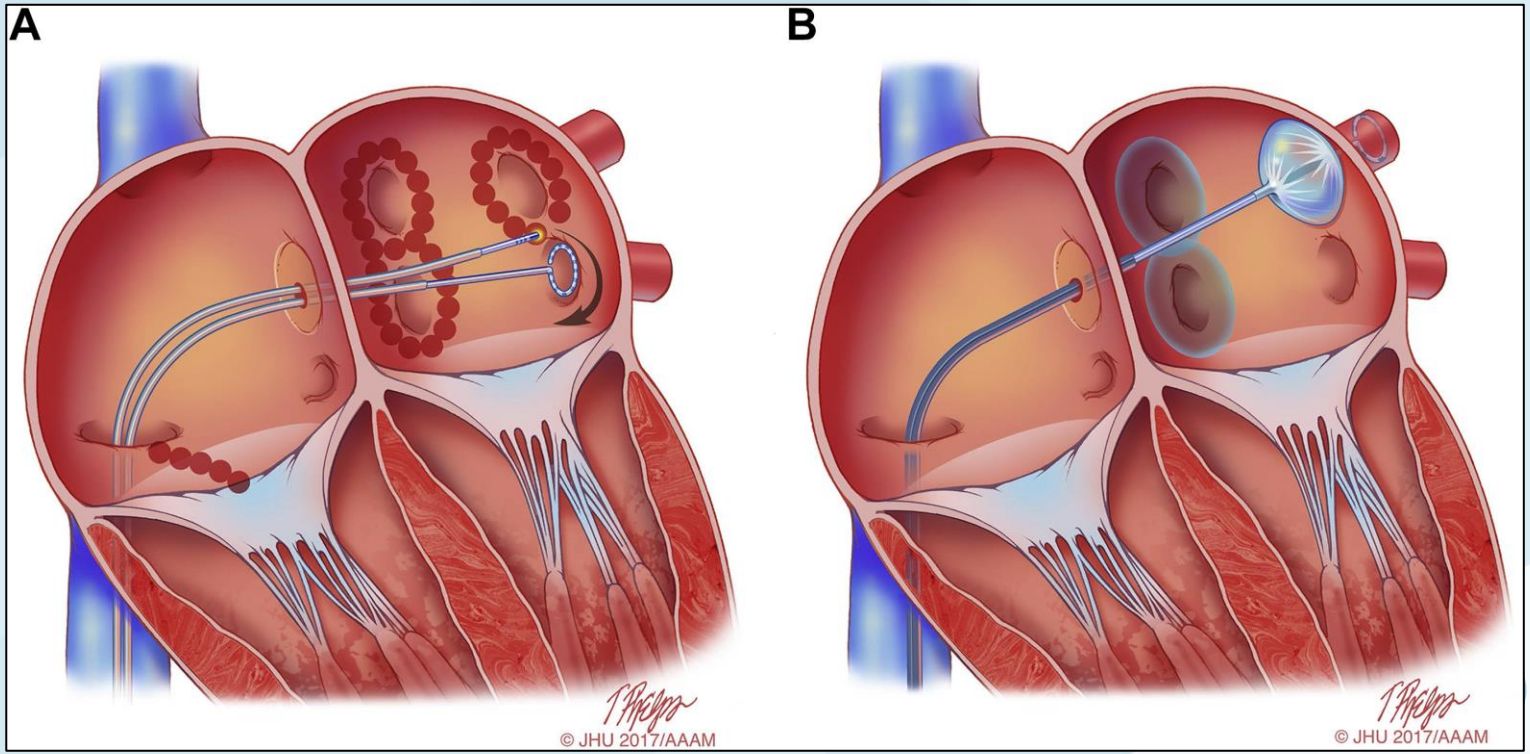
Ablation de FA – Isolation des VPs



Ablation par radiofréquence (RF)

Ablation par cryoballon



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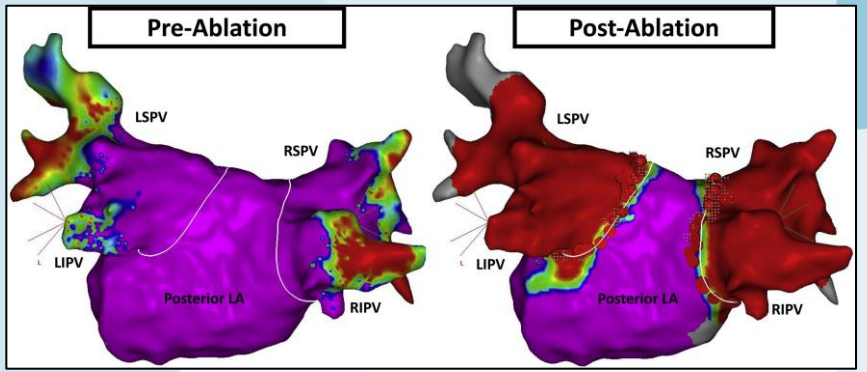
Candidats adéquats pour une ablation de FA

- Âge < 80 ans.
- Patients avec FA symptomatique.
- Histoire de dysfonction VG secondaire à FA rapide (cardiomyopathie rythmique).
- Patients avec échec ou intolérance au traitement anti-arythmique.
- FA paroxystique ou persistante d'une durée <5 ans.
- Cardiopathie structurelle légère à modérée.
- Patients avec dysfonction VG et FEVG 30-50%.
- Diamètre de l'oreillette gauche
  (moins de 55 mm).



Andrade JG, Sarrazin JF et al. 2020 CCS/CHRS Guidelines on Management of AF. Can J Cardiol 2020;36(12):1847-948.

Anticoagulation post-ablation

- Premiers 2 mois post-ablation
  - Anticoagulation pour TOUS les patients.
  - Ablation par cathéter endommage transitoirement l'endothélium de l'oreillette (état pro-thrombotique précoce).
- Par la suite (après 2 mois)
  - Anticoagulation selon CHADS-65 plutôt que le succès apparent de l'ablation.
  - Limitations
    - Épisodes asymptomatiques.
    - Récidive tardive.
    - Absence d'association temporelle entre la FA et AVC.
  - Étude en cours: OCEAN
    - Si absence de FA à 1 an post-ablation, Rivoraxaban vs ASA.

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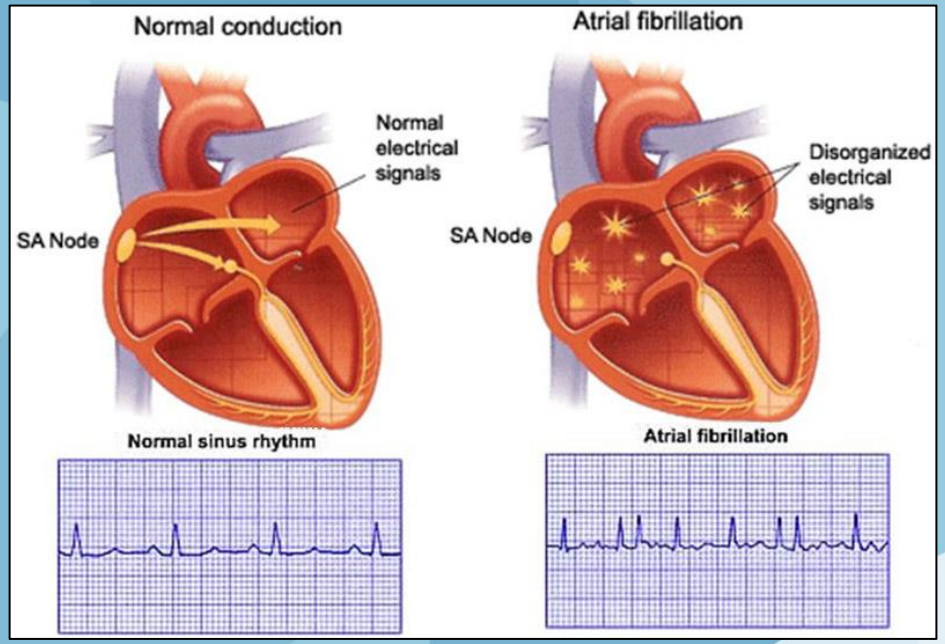
Complications

Type	Typical symptoms	Incidence	Treatment options and outcome	How to reduce risks
Thrombo-embolism TIA Stroke	Neurological deficit relating to the site of embolus	0.93% 0.2% (0.6%) 0.3% (0.28%)	Consider lysis therapy	Use irrigated tip catheter Monitor ACT every 30 min and adjust using i.v. heparin bolus
PV stenosis/occlusion	Cough, shortness of breath on exertion, resistant pneumonia, haemoptysis	Depending on the ablation site with regards to the PV ostium Up to 10% for focal PV ablation. <5% for segmental PV isolation	PV dilatation/recanalization eventually requiring stent implantation Frequent in-stent re-stenosis	Avoid intra-PV ablation and solid-tip ablation
Atrio-oesophageal fistula formation	Unexplained fever, dysphagia, seizure	<1%	Immediate surgical correction	Avoid excessive energy delivery at sites neighbouring the posterior LA wall
Tamponade Immediate Late (days after procedure)	Hypotension cardiac arrest	0.8% Up to 6% of all procedures Unknown	Immediate pericardiocentesis	Avoid direct mechanical trauma during trans-septal puncture Avoid pop formation Avoid excessive contact force
Phrenic nerve injury (mostly right-sided)	Diaphragmatic paralysis causing shortness of breath on exertion or dyspnoea at rest	Can be transient	Wait	Identify phrenic nerve location in relation to PV ostia by stimulation manoeuvre Avoid stretching the PV ostium (mostly when using balloon catheters
Perioesophageal injury	Intestinal symptoms (bloating, etc.)	May be transient Develops hours or days after the procedure 1% in cohort of 367 patients	If necessary Dilation of pylorus Botulinum injections	Unknown
Arteriovenous fistula	Pain at puncture site	0.43%	Compression Surgical correction rarely needed	Careful puncture technique
Aneurysm formation	Pain at puncture site	0.5–0.53%	Wait Thrombin injection	Careful puncture technique
Radiation injury	Pain and reddening at radiated site	Occurs late in follow-up Acute radiation injury very rare	Treat as burn injury	Avoid excessive radiation exposure and employ ALARA concept Use 3D mapping technology Use low frame rate pulsed fluoroscopy Optimal adjustment of fluoroscopy exposure rates
Mitral valve injury	Entrapment of catheters Extensive scarring after excessive ablation on valvular tissue	Very uncommon	Gentle catheter retraction while sheath is advanced into the ventricle Surgical removal	Recognition of the anatomic relationship of the LA/LV anatomy in 3D Monitor signals while manipulating catheters
Acute coronary injury	Chest pain ST elevation Hypotension	Very rare 1/356 patients in single case report	Standard percutaneous therapy for acute coronary occlusion	Avoid excessive energy application close to the coronary arteries Avoid intracoronary sinus ablation when possible
Air embolism	Acute ischaemia Hypotension Atrioventricular block Cardiac arrest		Aspiration of air in long sheaths Watch and wait Pacing Perform CPR if needed	Careful aspiration of all indwelling sheaths Constant positive pressure on trans-septal sheaths
Haematoma at puncture site	Pain Swelling Discolouration	Frequent	Compression, in rare cases surgical treatment Sheath removal after normalization of ACT	Careful compression Sheath removal after normalization of ACT
Death overall		0.7%		

2020 ESC AF Guidelines. Eur Heart J 2021;42(5):373-498.

Questions?



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