VOLTA MEDICAL

The RESTART trial

Re-ablation using a Tailored Approach for Persistent **AF**

ClinicalTrials.gov: NCT05477147

Internet site: www.volta-medical.com

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Study Web Tools

Medrio eCRF

Florence eTMF

RESTART - app

CIP ID: CLIPL-01-003
CIP Revision: B/B2

Version 1.3
2-Oct-23

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Enrollment Status

As of October 2nd, 2023:

11 EU/FR sites activated!

38 patients consented (12 withdrawn because of reconnected PVs)

18/92 (20%) patients enrolled with isolated PVs at study index ablation

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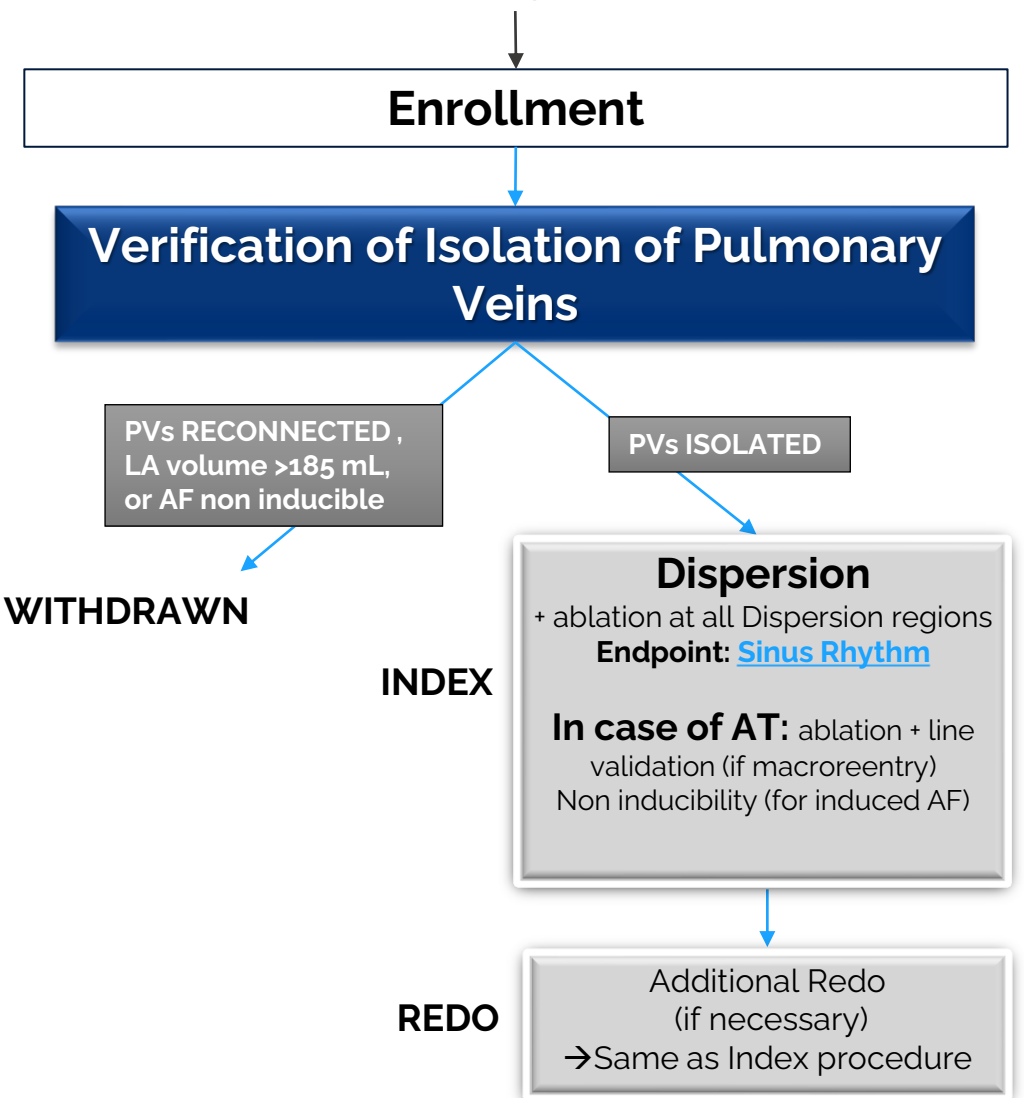
Study Design

Recurrent AF, indicated for **repeat ablation**, with **PVs isolated** from previous ablation



FOLLOW-UP : 3, 6, and 12 month

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Study Flowchart

ENROLLMENT

Baseline Visit:

- Informed consent
- Demographics, medical history, cardiac diagnosis, concomitant cardiac medication, adverse event review
- Documentation on AF (ECGs, physician's letter)
- AF assessment (AF presence and/or AF recurrence since last follow-up)
- 12-lead ECG, physical exam
- 12-lead ECG, QoL assessment

ABLATION

0- 90 days after enrollment

FOLLOW-UP

3, 6 and 12 month Visits

- QoL Questionnaires
- 12-Lead ECG
- 24-hour (minimum) Ambulatory Holter Monitor

If longer holters are SoC, sites are encourage to perform longer monitoring

- Report any AF/AT recurrence
- Physical Exam
- Verify Cardiac Medications
- AE Review

Re-ablation procedure window :
In the event of a recurrence, schedule your patients for a repeat ablation before the 9th month

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Main Inclusion Criteria

- Patients 21 years of age or older indicated for repeat AF ablation
- Previous catheter or surgical ablation for paroxysmal AF, persistent AF, or long-standing persistent AF, that occurred **at least 3 months prior to enrollment**
- Documented symptomatic **AF recurrences** that occurred **within the last 12 months**
- Continuous anticoagulation with warfarin (INR 2-3) or NOAC for > 4 weeks prior to ablation

A documentation of sustained AF occuring within the last 12 months, at least 3 months after the most recent ablation (or otherwise sustained until 3 months after the last ablation) is MANDATORY (documentation with ECG, holters, physician's letter)

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Exclusion Criteria (1/3)

1. Previous ablation procedure-related **complication** (e.g. fistula, perforation, etc.)
2. **Previous ablation for long-standing persistent AF with a duration ≥ 24 months**
3. **Long-standing persistent AF recurrence (>1-year)** prior to redo procedure
4. Previous AF ablation using **VX1 software**
5. **Severe obesity (BMI > 50)**
6. **Very dilated Left Atrium (LA) (e.g. LA diameter > 55 mm and/or LA surface > 40 cm2 determined by 2D echocardiography)**
7. Patients with **AF secondary** to an obvious reversible cause
8. Inadequate anticoagulation as defined in the inclusion criteria
9. **LA thrombus** on TEE* or CT Scan prior to procedure
10. Contraindications to **anticoagulation** (heparin, warfarin or NOAC)
11. Patients who are or may potentially be **pregnant**
12. Any cardiac surgery except **catheter ablation within the past 2 months** (60 days) (includes **PCI**)
13. **Myocardial infarction** within the past 2 months (60 days)
14. Previous **AV valve surgery**
15. Patient diagnosed with hypertrophic **cardiomyopathy**
16. History of **blood clotting** or bleeding abnormalities

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Exclusion Criteria (2/3)

17. Documented **arterial thromboembolic event** (including TIA) within the past 12 months (365 days)
18. **Rheumatic** Heart Disease
19. Cardiac **Sarcoidosis**
20. Chronic severe Heart Failure (**NYHA functional class IV and/or LVEF < 25%**)
21. **Awaiting cardiac transplantation or other cardiac surgery** within the next 12 months (365 days)
22. Unstable **angina** within the past month
23. Acute illness or active **systemic infection** or sepsis
24. **AF secondary to electrolyte imbalance, thyroid disease, or reversible or non-cardiac cause**
25. Diagnosed atrial **myxoma**
26. Significant **severe pulmonary disease** (e.g. patients with restrictive pulmonary disease, constrictive or chronic obstructive pulmonary disease in GOLD stage IV) or any other disease or malfunction of the lungs or respiratory system that produces chronic symptoms (e.g. unstable or untreated sleep apnea)
27. Significant **congenital anomaly** or medical problem that in the opinion of the investigator would preclude enrollment

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Exclusion Criteria (3/3)

28. Enrollment in **another investigational study** (device, biologic, or drug)
29. Presence of intramural thrombus, tumor or other abnormality or condition that precludes **vascular access**, or manipulation of the catheter
30. Life expectancy or other disease processes likely to limit **survival to less than 12 months**
31. Acute **Covid-19** infection (fever and/or biological inflammatory syndrome, and positive test documented)

*Only TEE is acceptable in the United States to screen for LA thrombus. If a subject cannot have a TEE performed or if the center's standard practice is to perform ICE, then ICE at the beginning of the procedure to screen for LA thrombus is acceptable.

** In France, patients not affiliated to the French social security system or to an equivalent social security system, as well as adults deprived of liberty (article L1121-6 of the Public Health Code) or protected (article L1121-8), cannot be included in the study.

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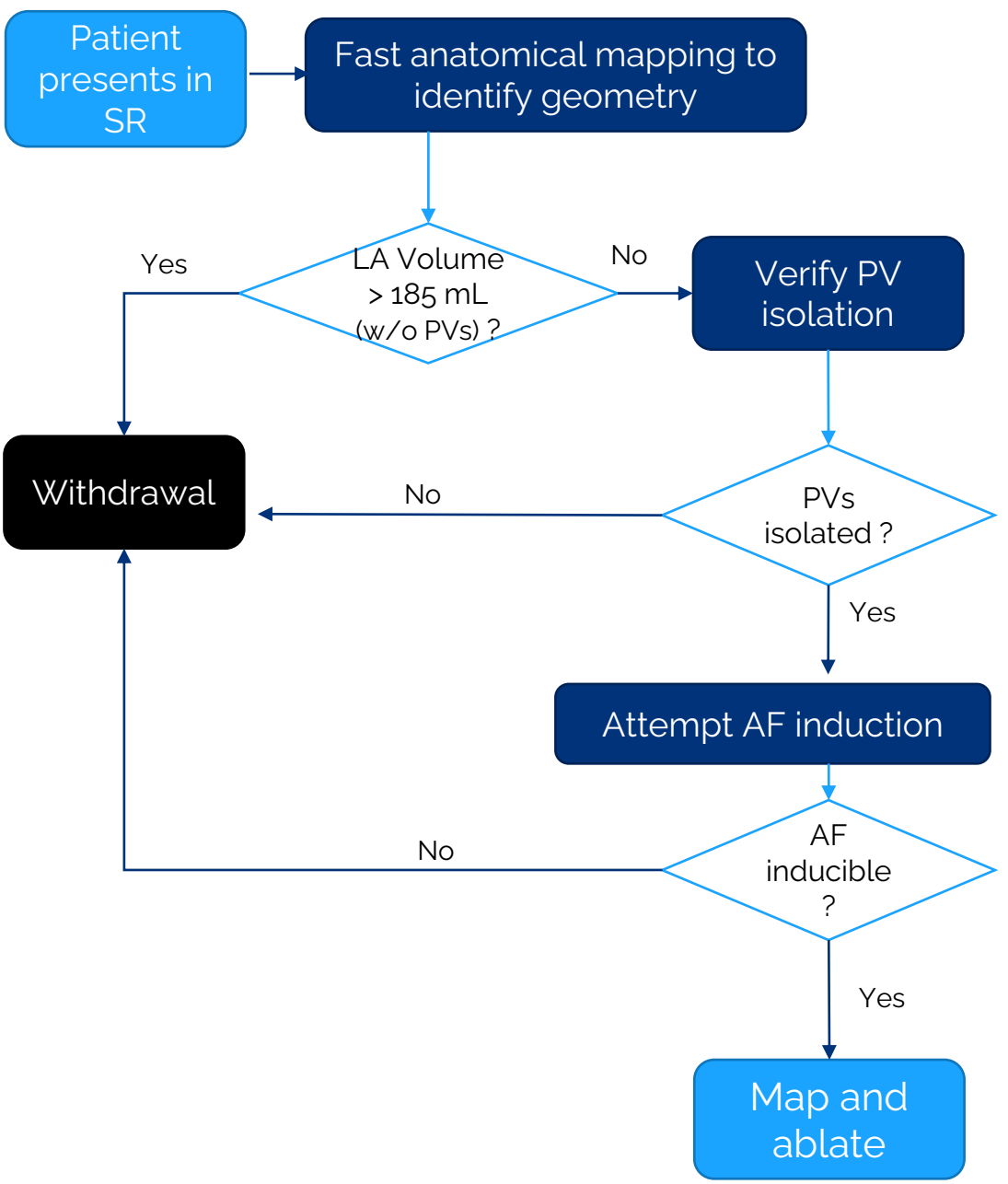
Ablation Protocol – Decision Tree (1/3)



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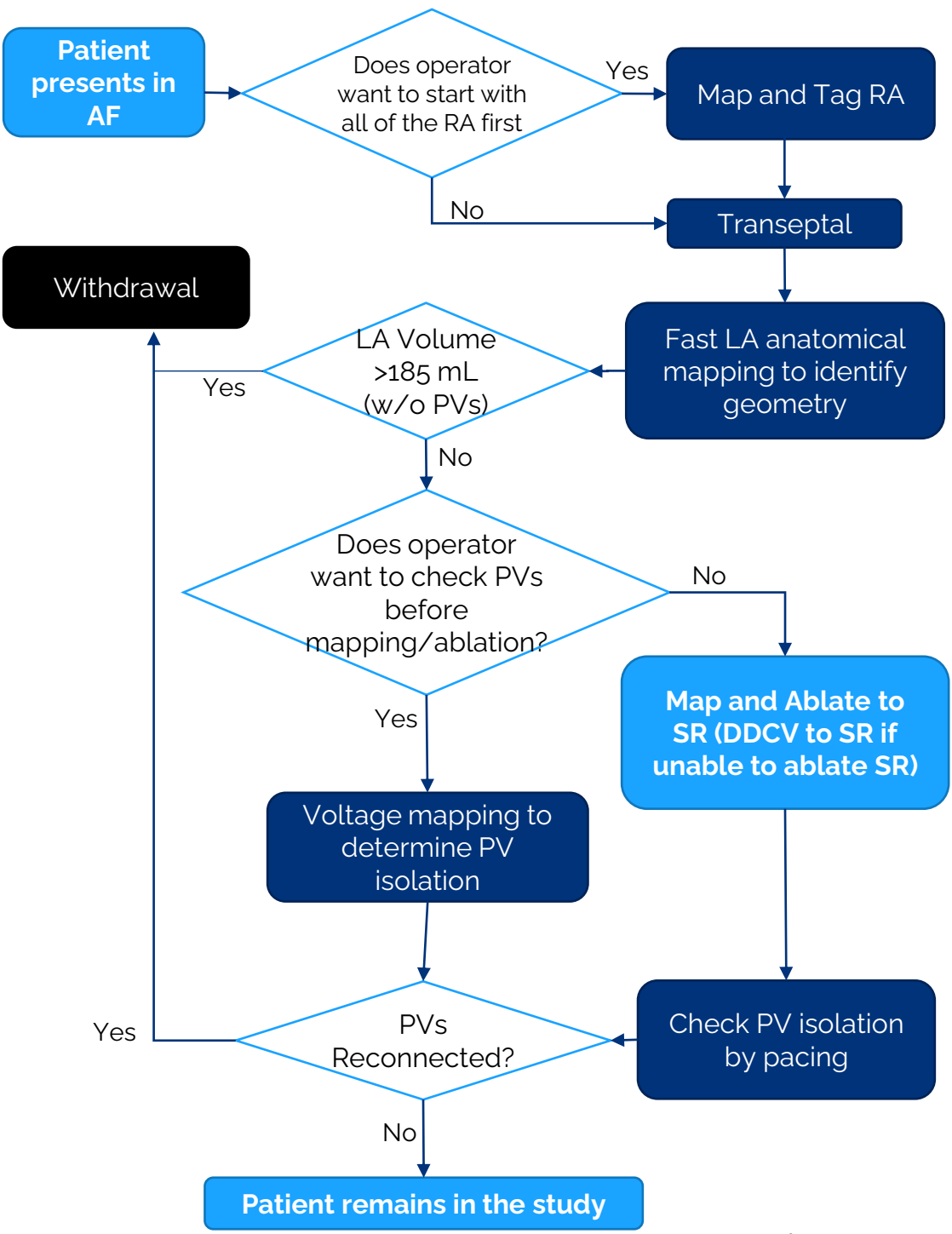
Ablation Protocol – Decision Tree (2/3)



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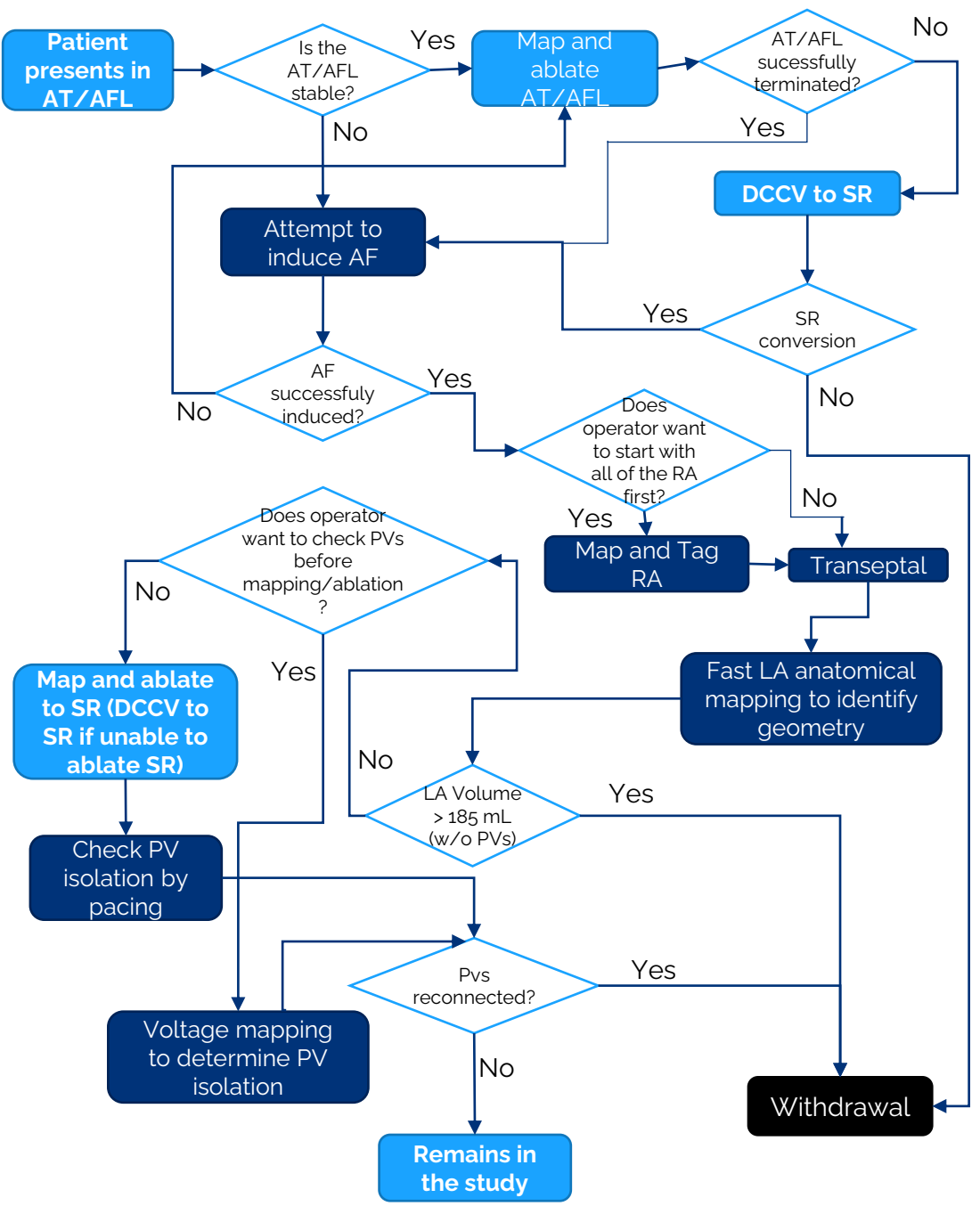
Ablation Protocol – Decision Tree (3/3)



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AF induction Protocol (suggested)

1. Isoproterenol infusion : one vial (0,20 mg/1ml) in a 20 cc syringe of physiological saline. Provide a 1 cc bolus in order to target a heart rate of 120-140/min.
    a. Provide another 1 cc bolus after 1 min if the HR target is not reached

2. If patient is still in SR: burst pacing protocol:
    a. Pace with the sinus catheter probe at 300 ms during 20-30 sec
    b. If patient is still in SR, same protocol at 280 ms
    c. If patient is still in SR, same protocol at 260 ms
    d. If patient is still in SR, same protocol at 240 ms
    e. If patient is still in SR, same protocol at 220 ms
    f. If patient is still in SR, same protocol at 200 ms
    g. If patient is still in SR, burst pacing starting at 300ms with progressive decrements to until a pacing interval of 170ms is reached
    h. If patient is still in SR, repeat step g at least 2 additional times in different locations

3. After all these steps, if the participant is still in sinus rhythm, the participant is not inducible.
    The participant will be withdrawn from the study and the ablation is at the physician's discretion.

In case of AF induction with a specific protocol (for instance burst at 260ms leading to AF induction), it is mandatory to use the same protocol to test inducibility at the end of the procedure, unless medically contraindicated.

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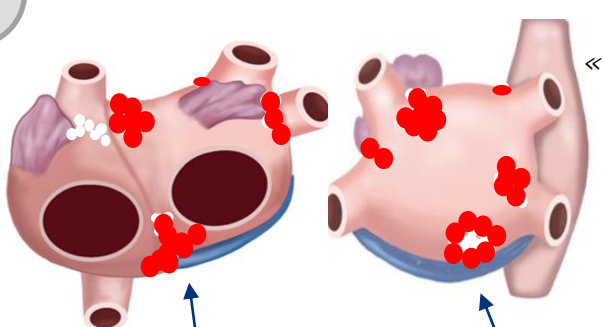
Ablation Protocol

1 **Bi-atrial AF mapping**

Guided by VX1, thorough and high density

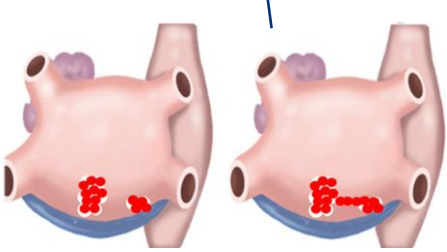
Remapping and reablation if needed

2 **Ablation at dispersion areas**

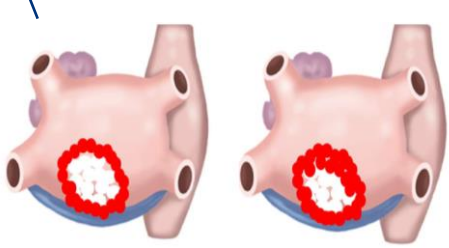


« Ablate & connect » and/or « Circle & connect » + subsequent AT ablation

Primary Endpoint: Sinus rhythm conversion



« Ablate & connect »



« Circle & connect »

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Medication guidelines

Pre-ablation:

- AADs should be stopped before ablation
- **Continuous anticoagulation for >4 weeks prior to ablation is mandatory**

  (Only 1 or 2 doses of oral anticoagulation may be interrupted by the investigator)

Intraprocedural:

- Anticoagulation consistent with your standard practice should be used
- Heparin should be administered prior to or immediately following transseptal puncture, and adjusted to achieve and maintain an ACT of at least 300 seconds

Post-ablation:

- Systemic anticoagulation is recommended for at least 2 months after the procedure
- AADs are allowed for the first 3 months (post-ablation blanking period) **but discontinuation is required at 3 months**
- **The use of diuretics prophylactically, especially for long procedures regardless of the study arm, is recommended**

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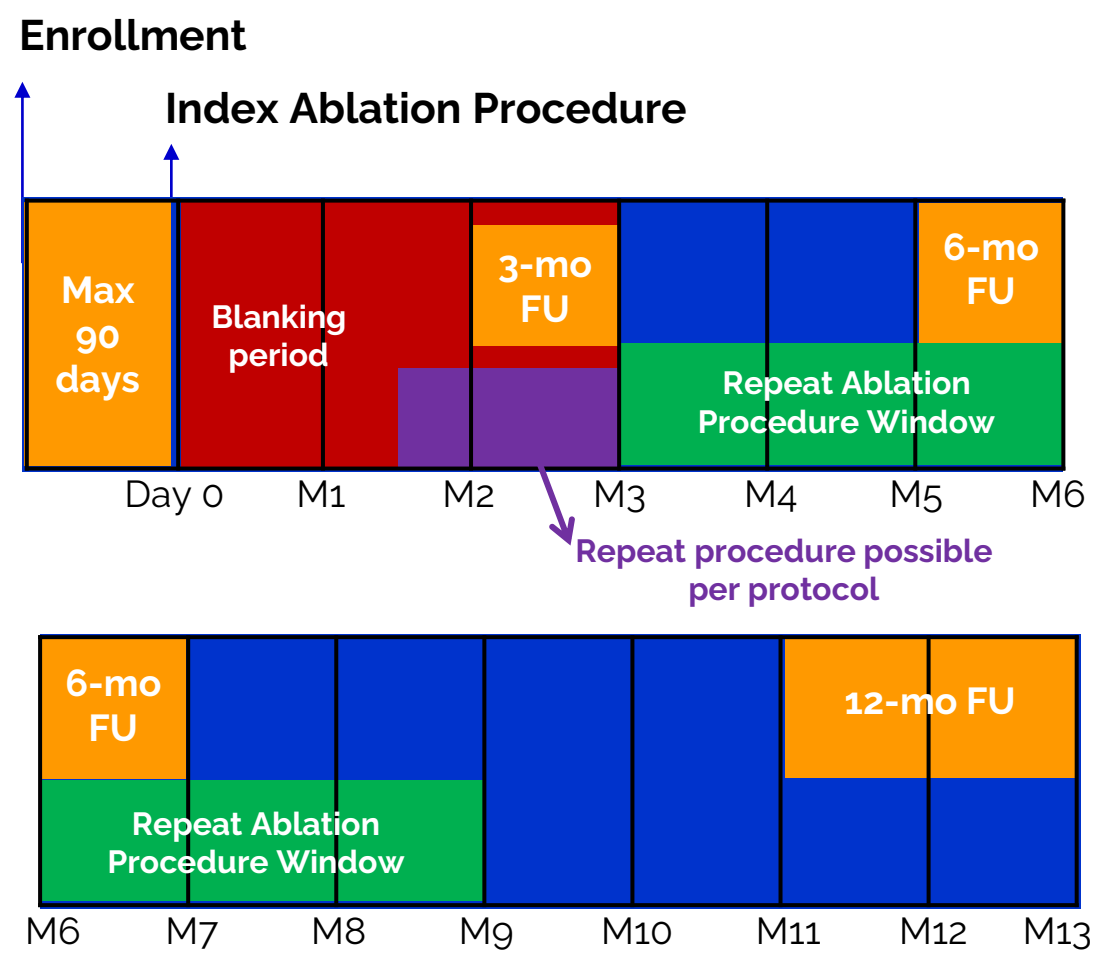
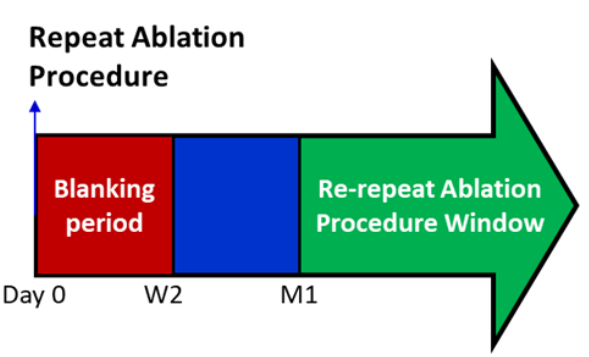
Windows and blanking periods



Repeat Ablation Procedure



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Contact information

SPONSOR – Volta Medical

For Sales & Technical Requests — sales@volta-medical.com

For all Study-related Questions

EU	Paola MILPIED, Sr VP Clinical, Quality & Regulatory Affairs	paola.milpied@volta-medical.com + 33 7 68 02 54 99
US	Daniel GUERRERO, US Director of Clinical Affairs	daniel.guerrero@volta-medical.com +1 (612) 227-1483

For Monitoring

EU	Marie GROSCLAUDE, Sr CRA	marie.grosclaude@volta-medical.com +33 6 29 42 53 31
US	Brian HOELKER, Sr CRA	brian.hoelker@volta-medical.com +1 (513) 706-3916

CRO – HRCRS

Study Inbox — restart@hrcrs.com

Ali KALLEVIG, Project Manager — akallevig@hrcrs.com