CardioVascular Learning Network | CME

# Electrophysiologists & EP Lab Staff in Germany

**Supported by an educational grant from Haemonetics Corporation.**

# Faculty

**Prof. Dr. Christian-Hendrik Heeger**
Director, Department of Rhythmology
Abteilung für Kardiologie and Internistische Intensivmedizin
Germany

**Prof. Dr. Roland Tilz**
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Germany

# Faculty Disclosures

- **Roland R. Tilz:** Advisory board – Abbott, Boston Scientific, Philips, Biosense Webster, Medtronic; lectures – Abbott, AstraZeneca, Biosense Webster, Boston Scientific, C.T.I., Doctrina Med, Medtronic, Pfizer; research/grant support – Abbott, Biotronik, Medtronic, Lifetech, Johnson & Johnson; clinical trials – Abbott, Biotronik, Boston Scientific, Medtronic; other material support – Abbott, Biosense Webster, Boston Scientific, C.T.I., Doctrina Med, Medtronic, Philips
- **Christian-Hendrik Heeger:** Advisory board – Boston, J&J,Heamonetics, Lifetech; research/grant support – Boston, Medtronic,CTI, Pfizer, Lifetech, J&J, Heamonetics; honoraria – Boston, J&J,Medtronic, CTI, Pfizer, DoctrinaMed, Lifetech; clinical trials – Boston,J&J, Medtronic, Heamonetics, Lifetech; other financial support – Boston, Lifetech, Pfizer, J&J, CTI, DoctrinaMed, CME4U

# Program Information

- This program is provided by HMP Education, an HMP Global company
- Supported by an educational grant from Haemonetics Corporation

# Learning Objectives

- Analyze the current implementation of same day discharge (SDD) practices in Germany, including procedure eligibility, workflow changes, and patient selection
- Evaluate recent regulatory changes in Germany that impact same day discharge protocols for electrophysiology procedures
- Explore future directions of same day discharge and assess the role of vascular closure devices in improving workflow efficiency and patient outcomes

CardioVascular Learning Network | CME

# Current Landscape of Same Day Discharge in Germany

Roland R. Tilz
Klinik für Rhythmologie, UHZ Lübeck

# Outpatient Procedures

- Not required
- Costs are not relevant – I am a doctor, not a businessman
- No data available
- Dangerous
- Not feasible in Germany
- Summary

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- Not required
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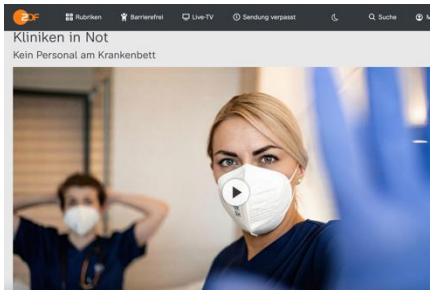
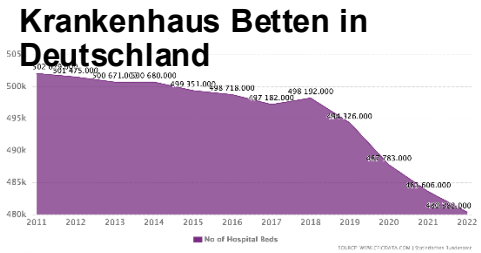
# Not Required?

- An aging society, fewer healthcare professionals, fewer hospitals and capacities, and less funding in the healthcare system

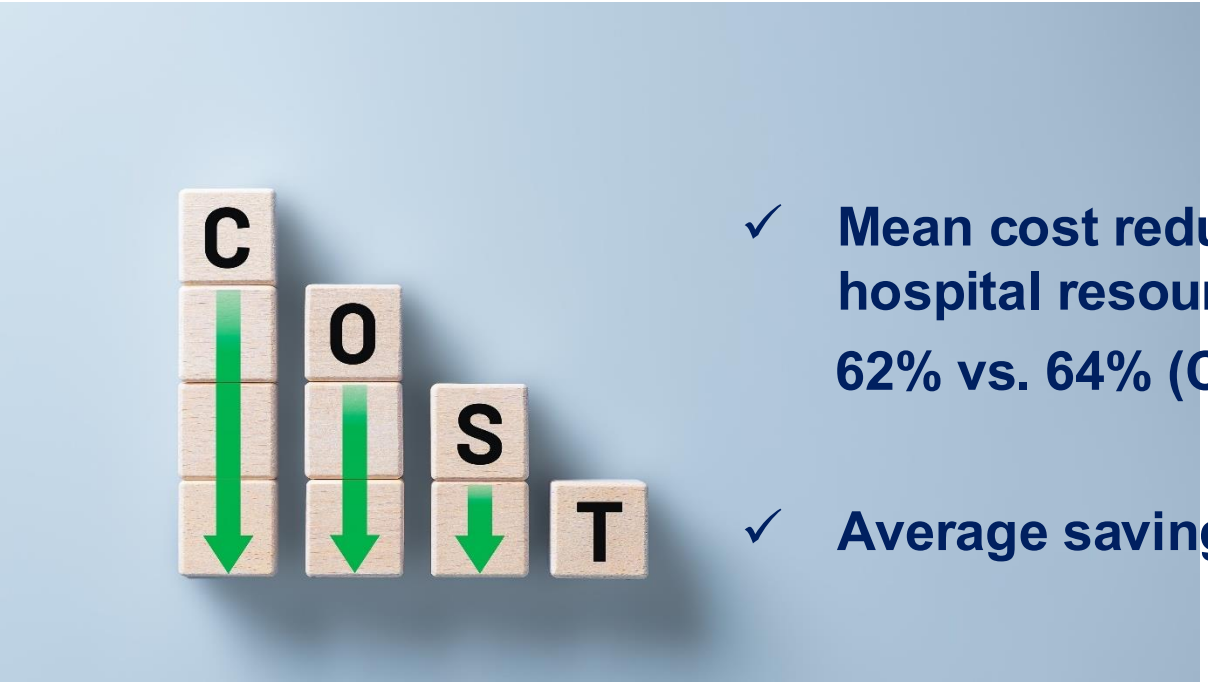





**References**

# Cost Reduction: Expansion of Capacities




- ✓ **Mean cost reduction due to use of hospital resources:**
  **62% vs. 64% (CB vs. RF)**
- ✓ **Average saving per procedure: 859 €**

Jiminez-Candil J, et al. *Europace*. 2023;25:1-9. Sahashi Y, et al. *Europace*. 2022;24:755-761.

# Cost Reduction: Expansion of Capacities
## Access to Healthcare and AF Ablation to All Pts


Jiminez-Candil J, et al. *Europace*. 2023;25:1-9. Sahashi Y, et al. *Europace*. 2022;24:755-761.

# Outpatient Procedures

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- Costs are not relevant – I am a doctor, not a businessman
- No data available
- Dangerous
- Not feasible in Germany
- Summary

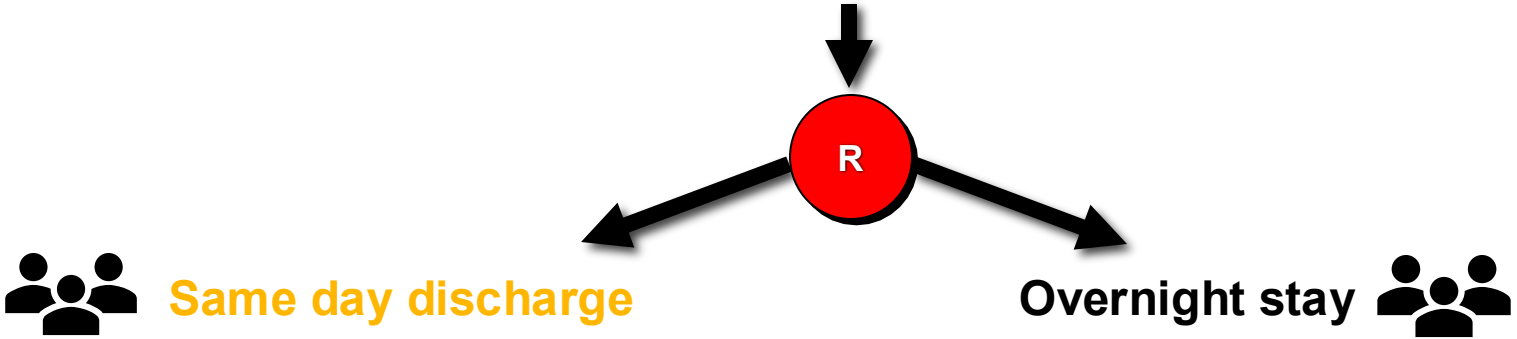
# No Data for SDD AF Ablation?

- Fabriccatore D, et al. *Europace.* 2023; 25:1361–1368.
- Jiminez-Candil J, et al. *Europace.* 2023;25:1–9.
- Honarbakhsh S, et al. *Europace*. 2023;25:1–9 (**prospective**)
- Sahashi Y, et al. *J Interv Card Electrophysiol* 2022;63(2):251-258.
- Rajendra A, et al. *JACC Clin Electrophysiol.* 2023;9(8 Pt 2):1515-1526.
- Rajendra A, et al. *J Interv Card Electrophysiol.* 2021;62:419–25.
- Dyell MW, et al. Europace 2023;25:400–407
- Dyell MW, et al. *JACC EP*. 2020;6:609–619
- Sangrigoli R, et al. *Journal of Interventional Cardiac Electrophysiology* (2023) 66:1601–1607
- Creta A, et al. *J Cardiovasc Electrophysiol* 2020;31:3097–3103.
- Baily SA, et al. *J Atr Fibrillation* 2021;14:20200499.
- König S, et al. *Europace* 2022;24:701–2.
- Castro-Urda C, et al. *PACE.* 2023;46:598-606 (RPOFA trial) (**prospective**)
- Zylla M, et al. *Europace.* 2024;26.

# SHAzAM AF Study

**S**ame-day dis**CH**arge versus overnight st**A**y following pul**M**onary vein isolation for **A**trial **F**ibrillation

AF ablation with 1-2 femoral venous access sites (6 to 14 Fr sheath) independent of energy source (n=290, 1:1 randomization)




**Primary safety endpoint (safety):** 30-day vascular access-related adverse events
**Primary efficacy endpoint:** Time to ambulation

**Clinical trial NCT06598280.**

# Outpatient Procedures

- Not required
- Costs are not relevant – I am a doctor, not a businessman
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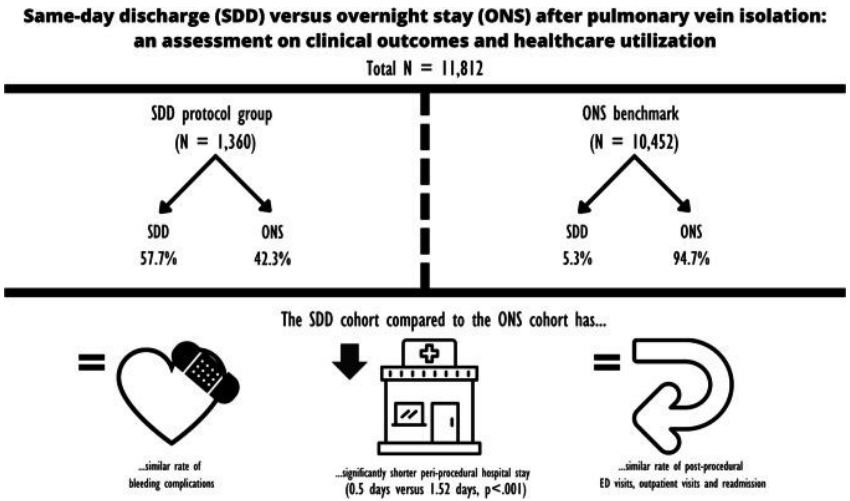
# SDD Vs Overnight Stay after PVI: Similar Complication Rates And Lower Healthcare Utilization




| | SDD protocol group | ONS benchmark | *p*-value |
|---|---|---|---|
| ***Clinical outcomes*** | ***N* = 1360** | ***N* = 10,452** | |
| 30-days mortality (*n*, %) | 0 (0.0) | 0 (0.0) | n/a |
| Bleeding complication during hospital stay (*n*, %) | 6 (0.5) | 42 (0.5) | 0.830 |
| Thromboembolic complication (< 72 h) (*n*, %) | 2 (0.2) | 17 (0.2) | 0.893 |
| Vascular complication (< 30 days) (*n*, %) | 14 (1.2) | 119 (1.5) | 0.720 |
| Cardiac tamponade (< 30 days) (*n*, %) | 5 (0.4) | 48 (0.6) | 0.634 |
| Phrenic nerve injury during admission (*n*, %) | 15 (1.3) | 49 (0.6) | 0.005 |
| ***Healthcare utilization*** | ***N* = 1150** | ***N* = 8391** | |
| Peri-procedural hospital stay (days), (mean, SD) | 0.50 (1.13) | 1.52 (2.51) | < 0.001 |
| ED visit within 7 days after PVI (*n*, %) | 52 (3.82) | 495 (4.73) | 0.132 |
| Outpatient visits within 14 months, average visits (mean, SD) | 2.61 (2.34) | 2.74 (2.72) | 0.092 |
| Readmission within 4 months (*n*, %) | 214 (15.74) | 1780 (17.03) | 0.230 |

**PVI = pulmonary vein isolation.**
**Slingerland, et al. *JCE*. 2025;68(6):1351–1357.**

# Safety of SDD following PFA vs Radiofrequency Ablation

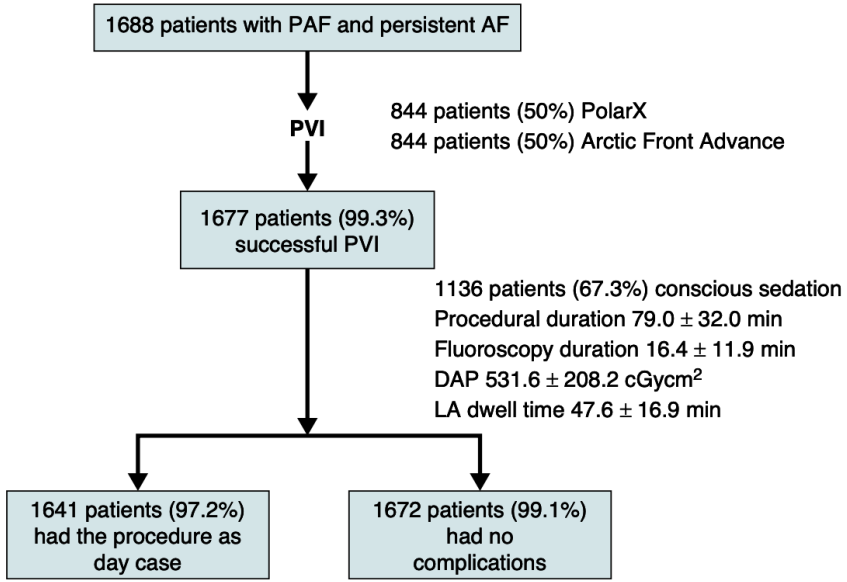
- SDD in the PFA cohort predictor lower CHA2DS2-VASc score (OR = 0.754, 95% CI: 0.663–0.858, $p < 0.001$)
- Being octogenarian reduced the likelihood of SDD (OR = 0.265, 95% CI: 0.105–0.666, $p = 0.005$)


| | PFA SDD | PFA non-SDD | *p* value (PFA) | RFA SDD | RFA non-SDD | *p* value (RFA) | *p* value (PFA SDD vs. RFA SDD) |
|---|---|---|---|---|---|---|---|
| Major complications: | 0 (0) | 8 (0.5) | 0.292 | 0 (0) | 10 (1.1) | 0.244 | |
| Vascular | 0 (0) | 8 (0.5) | | 0 (0) | 4 (0.42) | | |
| CVA/TIA | 0 (0) | 0 (0) | | 0 (0) | 2 (0.21) | | |
| Phrenic nerve injury | 0 (0) | 0 (0) | | 0 (0) | 3 (0.32) | | |
| Pericardial effusion requiring intervention | 0 (0) | 0 (0) | | 0 (0) | 1 (0.20) | | |
| Minor complications | 1 (0.5) | 8 (1.1) | 0.440 | 2 (1.6) | 15 (1.6) | 0.992 | 0.305 |
| Readmission rates | 3 (1.4) | 10 (1.3) | 0.902 | 3 (2.4) | 29 (3.1) | 0.660 | 0.542 |
| All-cause mortality | 0 (0) | 0 (0) | | 0 (0) | 0 (0) | | |

**PFA = pulsed-field ablation; RFA = radiofrequency ablation.**
**Watfa, et al. *JCE.* 2025;48(8):852–858.**

# Same Day Discharge Cryo Ablation

- Multi-center study across 12 centers
- No exclusion criteria for SDD



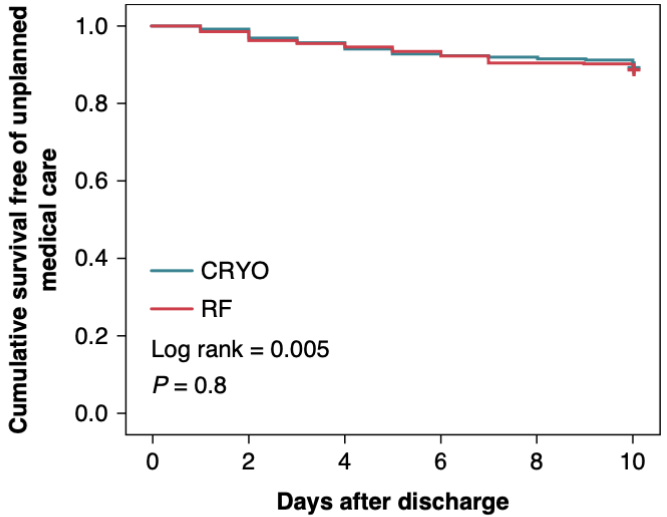

**Honarbakhsh S, et al. *Europace.* 2023;25:1–9.**

# Same Day Discharge Cryo Ablation: Safety

| Procedural and cryoablation metrics | PolarX cohort *n* = 844 | AFA cohort *n* = 844 | *P*-value |
|---|---|---|---|
| Procedural metrics | | | |
| Procedural duration, min, mean ± SD | 78.6 ± 38.1 | 79.4 ± 25.8 | 0.55 |
| Fluoroscopy time, min, mean ± SD | 16.1 ± 12.3 | 16.7 ± 11.4 | 0.68 |
| Dose area product, cGycm$^2$, mean ± SD | 531.2 ± 216.3 | 532 ± 200.1 | 0.45 |
| Complications, *n* (%) | 7 (0.8) | 9 (1.1) | 0.80 |
| Immediate complications, *n* (%) | 6 (0.7) | 8 (0.9) | 0.79 |
| Cardiac tamponade, *n* (%) | 3 (0.4) | 3 (0.4) | 1.00 |
| Groin haematoma, *n* (%) | 3 (0.4) | 4 (0.5) | 1.00 |
| Phrenic nerve palsy, *n* (%) | 0 (0) | 1 (0.1) | 1.00 |
| 30-day complications, *n* (%) | 1 (0.1) | 1 (0.1) | 1.00 |
| Gastroparesis, *n* (%) | 1 (0.1) | 0 (0) | 1.00 |
| Phrenic nerve palsy, *n* (%) | 0 (0) | 1 (0.1) | 1.00 |
| Cryoablation metrics | | | |
| Number of cryoblations to achieve PVI per patient, *n*, mean ± SD | 5.9 ± 2.2 | 6.0 ± 2.0 | 0.65 |
| Number of cryoablations to achieve PVI per vein, *n*, mean ± SD | 1.5 ± 0.9 | 1.6 ± 1.0 | 0.72 |

Honarbakhsh S, et al. *Europace.* 2023;25:1–9.

# Unplanned Medical Care Post SDD PVI




**Patients at risk**

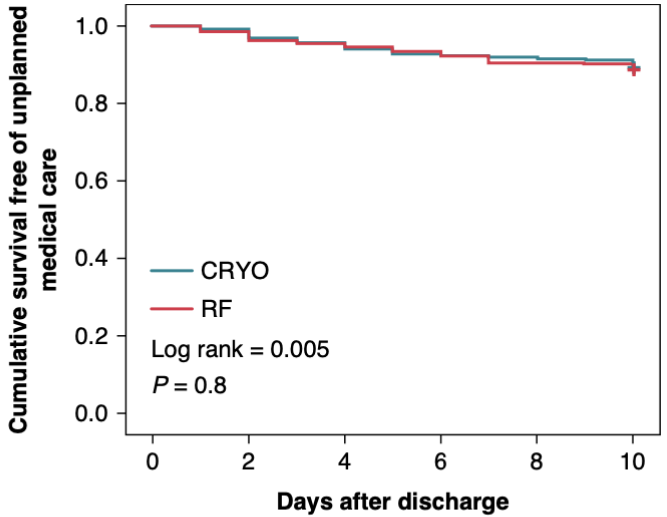
| | | | | | | |
|---|---|---|---|---|---|---|
| RF | 229 | 226 | 218 | 212 | 210 | 207 |
| CRYO | 356 | 350 | 339 | 332 | 321 | 320 |

Causes of urgent/unplanned medical care within 10 days

| | CRYO *n* = 42 | RF *n* = 27 |
|---|---|---|
| AF/flutter recurrence | 16 | 14 |
| Vascular complications | 10 | 5 |
| Inguinal haematoma | 7 | 4 |
| Severe inguinal haematoma | 3[a] | 1[a] |
| Urticaria | 3 | 1 |
| Pericarditis | 8[a] | 5[a] |
| Gastroparesis | 1 | 0 |
| Symptomatic sinus node dysfunction | 1[a] | 1[a] |
| Vasovagal syncope/pre-syncope | 2 | 1 |
| Ecchymosis | 1 | 0 |

**References**

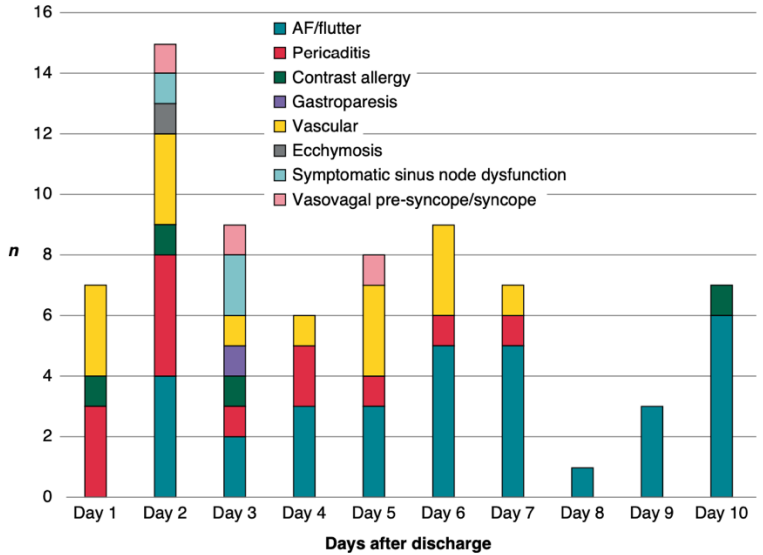
# Unplanned Medical Care Post SDD PVI




**Patients at risk**

| | | | | | | |
|---|---|---|---|---|---|---|
| RF | 229 | 226 | 218 | 212 | 210 | 207 |
| CRYO | 356 | 350 | 339 | 332 | 321 | 320 |

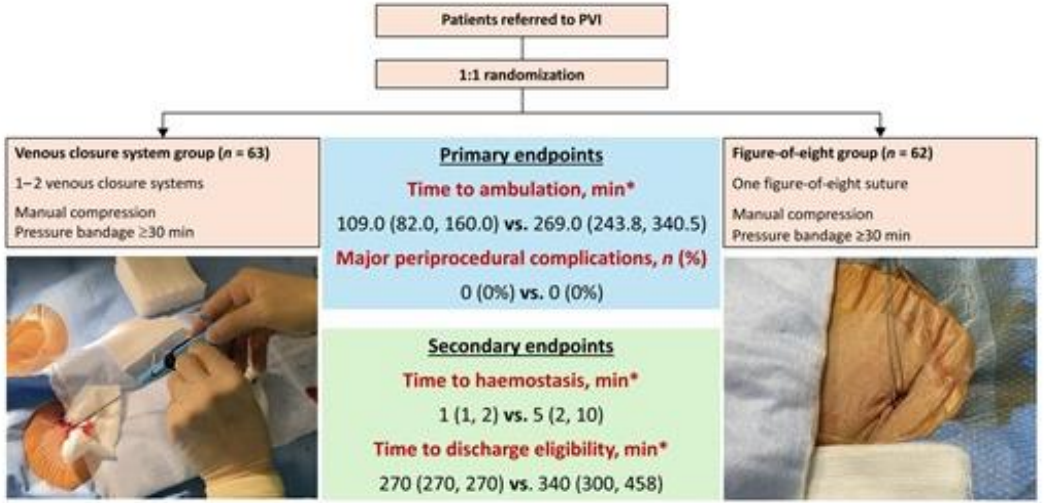
Causes and timing of urgent or unplanned medical care within 10 days of discharge




**References**

# Optimize “Vascular Access Management”

## STYLE-AF Study



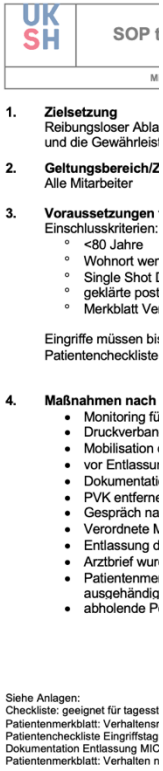

**Time: 1) to hemostasis ↓↓; 2) to ambulation ↓↓; 3) to discharge↓↓**

Fabriccatore D, et al. *Europace.* 2023;25:1361-1368. Tilz R, et al. *Europace.* 2024;26:5.

# Outpatient Procedures

- Not required
- Costs are not relevant – I am a doctor, not a businessman
- No data available
- Dangerous
- Not feasible in Germany
- Summary

# Standard Operating Procedures and Checklists: SDD PVI



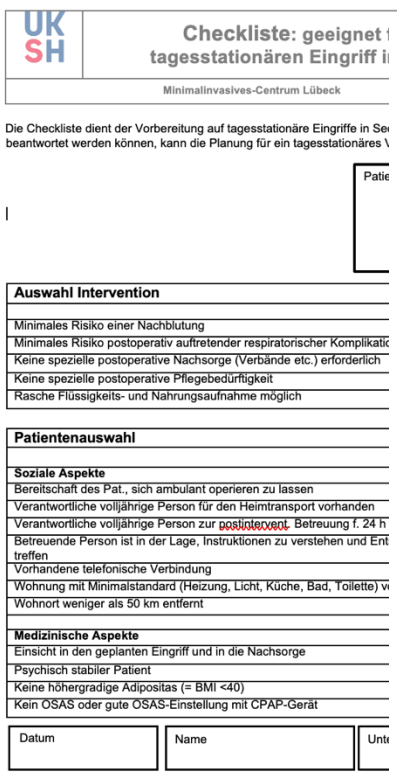
UK SH

SOP

1. **Zielsetzung**
   Reibungsloser Abla
   und die Gewährleis
2. **Geltungsbereich/Z**
   Alle Mitarbeiter
3. **Voraussetzungen**
   Einschlusskriterien:
   - <80 Jahre
   - Wohnort wer
   - Single Shot
   - geklärte post
   - Merkblatt Ve

   Eingriffe müssen bi
   Patientencheckliste
4. **Maßnahmen nach**
   - Monitoring fü
   - Druckverban
   - Mobilisation
   - vor Entlassu
   - Dokumentati
   - PVK entferne
   - Gespräch na
   - Verordnete M
   - Entlassung d
   - Arztbrief wur
   - Patientenme
     ausgehändig
   - abholende P

Siehe Anlagen:
Checkliste: geeignet für tagesst
Patientenmerkblatt: Verhaltensr
Patientencheckliste Eingriffstag
Dokumentation Entlassung MIC
Patientenmerkblatt: Verhalten n



UK SH

**Checkliste: geeignet**
**tagesstationären Eingriff i**

Minimalinvasives-Centrum Lübeck

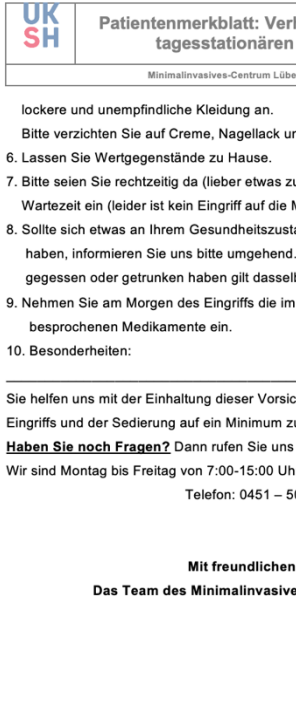
Die Checkliste dient der Vorbereitung auf tagesstationäre Eingriffe in Se
beantwortet werden können, kann die Planung für ein tagesstationäres V

Patie

| Auswahl Intervention |
|---|
| Minimales Risiko einer Nachblutung |
| Minimales Risiko postoperativ auftretender respiratorischer Komplikatio |
| Keine spezielle postoperative Nachsorge (Verbände etc.) erforderlich |
| Keine spezielle postoperative Pflegebedürftigkeit |
| Rasche Flüssigkeits- und Nahrungsaufnahme möglich |

| Patientenauswahl |
|---|
| **Soziale Aspekte** |
| Bereitschaft des Pat., sich ambulant operieren zu lassen |
| Verantwortliche volljährige Person für den Heimtransport vorhanden |
| Verantwortliche volljährige Person zur postinterventionellen Betreuung f. 24 h |
| Betreuende Person ist in der Lage, Instruktionen zu verstehen und Ent |
| treffen |
| Vorhandene telefonische Verbindung |
| Wohnung mit Minimalstandard (Heizung, Licht, Küche, Bad, Toilette) v |
| Wohnort weniger als 50 km entfernt |
| **Medizinische Aspekte** |
| Einsicht in den geplanten Eingriff und in die Nachsorge |
| Psychisch stabiler Patient |
| Keine höhergradige Adipositas (= BMI <40) |
| Kein OSAS oder gute OSAS-Einstellung mit CPAP-Gerät |

| Datum | Name | Unte |
|---|---|---|
| | | |



UK SH

**Patientenmerkblatt: Verl**
**tagesstationären**

Minimalinvasives-Centrum Lübe

lockere und unempfindliche Kleidung an.
Bitte verzichten Sie auf Creme, Nagellack ur

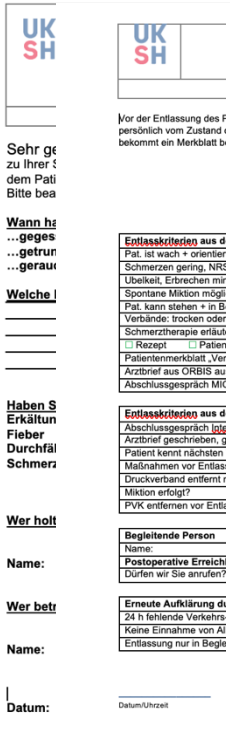
6. Lassen Sie Wertgegenstände zu Hause.
7. Bitte seien Sie rechtzeitig da (lieber etwas zu
   Wartezeit ein (leider ist kein Eingriff auf die M
8. Sollte sich etwas an Ihrem Gesundheitszust
   haben, informieren Sie uns bitte umgehend.
   gegessen oder getrunken haben gilt dassell
9. Nehmen Sie am Morgen des Eingriffs die im
   besprochenen Medikamente ein.
10. Besonderheiten:

Sie helfen uns mit der Einhaltung dieser Vorsic
Eingriffs und der Sedierung auf ein Minimum zu

**Haben Sie noch Fragen?** Dann rufen Sie uns
Wir sind Montag bis Freitag von 7:00-15:00 Uh
Telefon: 0451 – 5

**Mit freundlichen**

**Das Team des Minimalinvasive**



UK SH

Sehr ge
zu Ihrer
dem Pati
Bitte bea

**Wann ha**
**...geges**
**...getrun**
**...gerau**

**Welche**

**Haben S**
**Erkältun**
**Fieber**
**Durchfäl**
**Schmerz**

**Wer holt**

**Name:**

**Wer betr**

**Name:**

**Datum:**



UK SH

Vor der Entlassung des F
persönlich vom Zustand
bekommt ein Merkblatt b

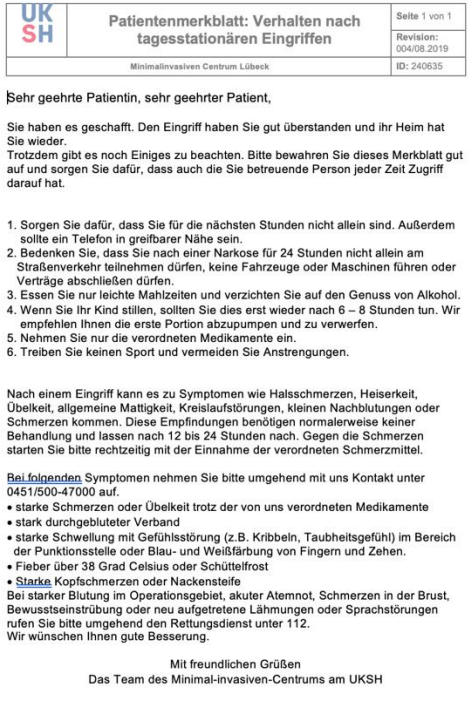
| Entlasskriterien aus d |
|---|
| Pat. ist wach + orientier |
| Schmerzen gering, NRS |
| Übelkeit, Erbrechen mir |
| Spontane Miktion mögli |
| Pat. kann stehen + in B |
| Verbände: trocken oder |
| Schmerztherapie erläut |
| ☐ Rezept ☐ Patien |
| Patientenmerkblatt „Ver |
| Arztbrief aus ORBIS au |
| Abschlussgespräch MIC |

| Entlasskriterien aus d |
|---|
| Abschlussgespräch lok |
| Arztbrief geschrieben, g |
| Patient kennt nächsten |
| Maßnahmen vor Entlass |
| Druckverband entfernt / |
| Miktion erfolgt? |
| PVK entfernen vor Entl |

| Begleitende Person |
|---|
| Name: |
| **Postoperative Erreich** |
| Dürfen wir Sie anrufen? |

| Erneute Aufklärung d |
|---|
| 24 h fehlende Verkehrs |
| Keine Einnahme von Al |
| Entlassung nur in Begle |

Datum/Uhrzeit



UK SH

**Patientenmerkblatt: Verhalten nach tagesstationären Eingriffen**

Minimalinvasiven Centrum Lübeck

Seite 1 von 1
Revision: 004/08.2019
ID: 240635

Sehr geehrte Patientin, sehr geehrter Patient,

Sie haben es geschafft. Den Eingriff haben Sie gut überstanden und ihr Heim hat Sie wieder.
Trotzdem gibt es noch Einiges zu beachten. Bitte bewahren Sie dieses Merkblatt gut auf und sorgen Sie dafür, dass auch die Sie betreuende Person jeder Zeit Zugriff darauf hat.

1. Sorgen Sie dafür, dass Sie für die nächsten Stunden nicht allein sind. Außerdem sollte ein Telefon in greifbarer Nähe sein.
2. Bedenken Sie, dass Sie nach einer Narkose für 24 Stunden nicht allein am Straßenverkehr teilnehmen dürfen, keine Fahrzeuge oder Maschinen führen oder Verträge abschließen dürfen.
3. Essen Sie nur leichte Mahlzeiten und verzichten Sie auf den Genuss von Alkohol.
4. Wenn Sie Ihr Kind stillen, sollten Sie dies erst wieder nach 6 – 8 Stunden tun. Wir empfehlen Ihnen die erste Portion abzupumpen und zu verwerfen.
5. Nehmen Sie nur die verordneten Medikamente ein.
6. Treiben Sie keinen Sport und vermeiden Sie Anstrengungen.

Nach einem Eingriff kann es zu Symptomen wie Halsschmerzen, Heiserkeit, Übelkeit, allgemeine Mattigkeit, Kreislaufstörungen, kleinen Nachblutungen oder Schmerzen kommen. Diese Empfindungen benötigen normalerweise keiner Behandlung und lassen nach 12 bis 24 Stunden nach. Gegen die Schmerzen starten Sie bitte rechtzeitig mit der Einnahme der verordneten Schmerzmittel.

Bei folgenden Symptomen nehmen Sie bitte umgehend mit uns Kontakt unter 0451/500-47000 auf.

- starke Schmerzen oder Übelkeit trotz der von uns verordneten Medikamente
- stark durchgebluteter Verband
- starke Schwellung mit Gefühlsstörung (z.B. Kribbeln, Taubheitsgefühl) im Bereich der Punktionsstelle oder Blau- und Weißfärbung von Fingern und Zehen.
- Fieber über 38 Grad Celsius oder Schüttelfrost
- Starke Kopfschmerzen oder Nackensteife

Bei starker Blutung im Operationsgebiet, akuter Atemnot, Schmerzen in der Brust, Bewusstseinstrübung oder neu aufgetretene Lähmungen oder Sprachstörungen rufen Sie bitte umgehend den Rettungsdienst unter 112.
Wir wünschen Ihnen gute Besserung.

Mit freundlichen Grüßen
Das Team des Minimal-invasiven-Centrums am UKSH

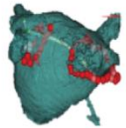
# Late Procedural Finish → SDD Protocol in Lübeck in 2025

7 am

8 am

1 pm

2 pm



- Cryo-PVI
- PFA-PVI
- SVT

Admission | Ablation / PVI | AWR | Ambulation | Discharge

- ✓ > 18 years old
- ✓ Residence < 50 km from the hospital
- ✓ Phone connection
- ✓ Mentally stable
- ✓ BMI < 40
- ✓ No OSAS or OSAS therapy

**Compression bandage for 1-4 hours**

Food and liquid intake

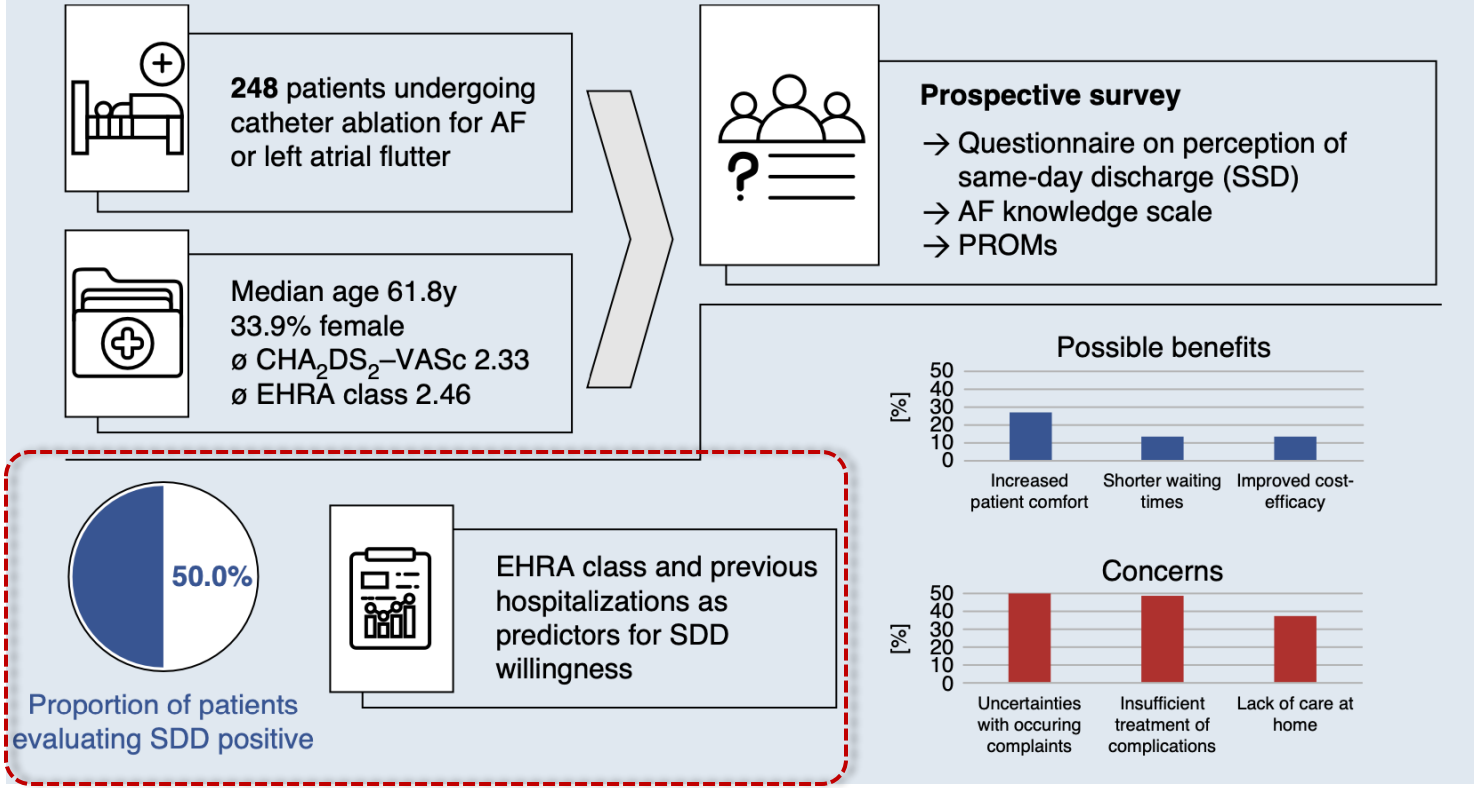
**Discharge home: 4-6 hours after PVI**

**OSAS = obstructive sleep apnea syndrome; BMI = body-mass index.**

# Wakeup Room

- MIC physician until 18:30
- DV 1 hr (closure device)
- DV 4 hrs (figure of 8 stitch)
- TTE after one hr

# Patient's Perspective (FAST AFA Trial)




König S, et al. *Europace.* 2023;25:1-6.

# Outpatient Procedures

- Not required
- Costs are not relevant – I am a doctor, not a businessman
- No data available
- Dangerous
- Not feasible in Germany
- Summary

# Current Landscape of Same Day Discharge in Germany

- Costs are relevant, because I am a doctor
- We have data, data, and more data
- Safe
- Feasible in Germany
- With the introduction of hybrid DRGs, they will be required

**DRG = diagnosis-related group.**

# SDD PVI: The Smartphone Discussion with Kids

CardioVascular Learning Network | CME

# Future Outlook and Impact of Vascular Closure Devices

Christian-Hendrik Heeger
Asklepios Klinik Hamburg Altona, Germany

# Background

- Vascular access-related complications
  - One of the most frequent complications and the leading cause of delayed discharge
  - Standard of care to achieve haemostasias after PVI: Manual compression with or without figure of eight suture

**Table 16** Procedure-related complications in catheter ablation and thoracoscopic ablation of AF[771]

| Complication severity | Complication type | Complication rate | |
|---|---|---|---|
| | | Catheter ablation | Thoracoscopic ablation |
| Life-threatening complications | Periprocedural death | <0.1% | <0.1% |
| | Oesophageal perforation/fistula | <0.5% | N/A |
| | Periprocedural thromboembolic event | <1.0% | <1.5% |
| | Cardiac tamponade | ≈1% | <1.0% |
| Severe complications | Pulmonary vein stenosis | <1.0% | N/A |
| | Persistent phrenic nerve palsy | <1.0% | N/A |
| | Vascular complications | 2-4% | N/A |
| | Conversion to sternotomy | N/A | <1.7% |
| | Pneumothorax | N/A | <6.5% |
| Moderate or minor complications | Various | 1 - 2% | 1 - 3% |
| Complications of unknown significance | Asymptomatic cerebral embolism | 5 - 15% | N/A |

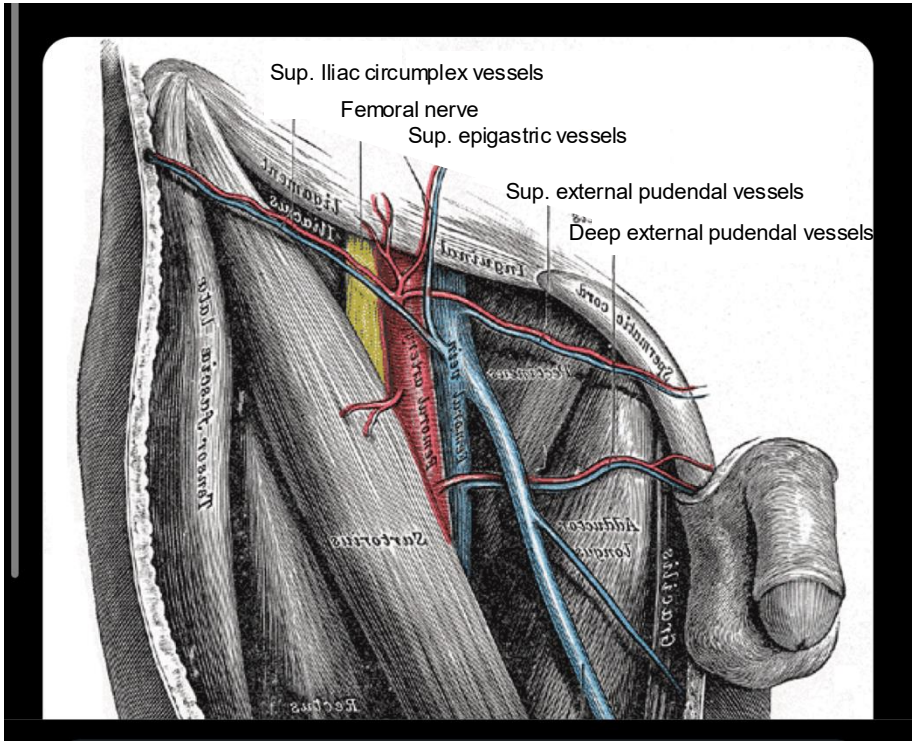
NA = not available.



**PVI = pulmonary vein isolation; AF = atrial fibrillation.**

**Gupta A, et al. *Circ Arrhythm Electrophysiol*. 2013;6(6):1082-8. Aytemir K, et al. *Europace*. 2016;18(10):1545-1550.**

# Anatomy: Regio Femoralis

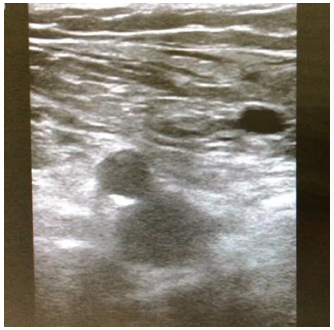



- Potential complications
  - Hematoma
  - Arterial puncture
  - AV-fistula
  - Pseudoaneurysm
  - Retroperitoneal hematoma
  - N. femoralis injury

**Sobotta**

# Reduction of Vascular Complications

## US-Guided Puncture



## Venous Closure Systems

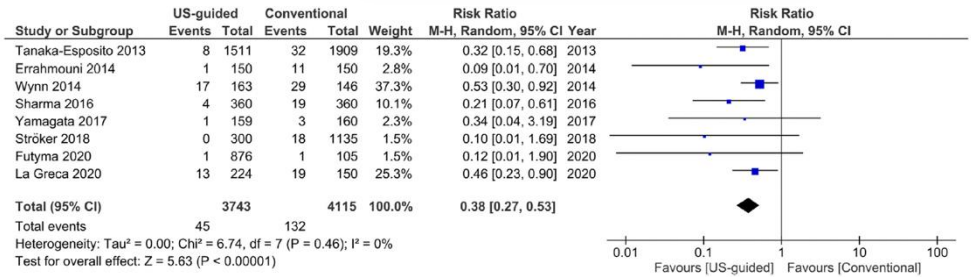



Fig. 2. Forest plot of comparison: US-guided vs. Conventional, outcome: Total vascular complications.

- AMBULATE trial
- PRO-PVI study
- STYLE-AF study

**US = ultrasound.**

**Triantafyllou K, et al. *Indian Pacing Electrophysiol J*. 2022;22(3):145-153. Tilz RR, et al. *Europace*. 2024;26(5):euae105. Natale A, et al. *JACC Clin Electrophysiol*. 2020;6(1):111-124. Fabbricatore D, et al. *Europace*. 2023;25(4):1361-1368.**

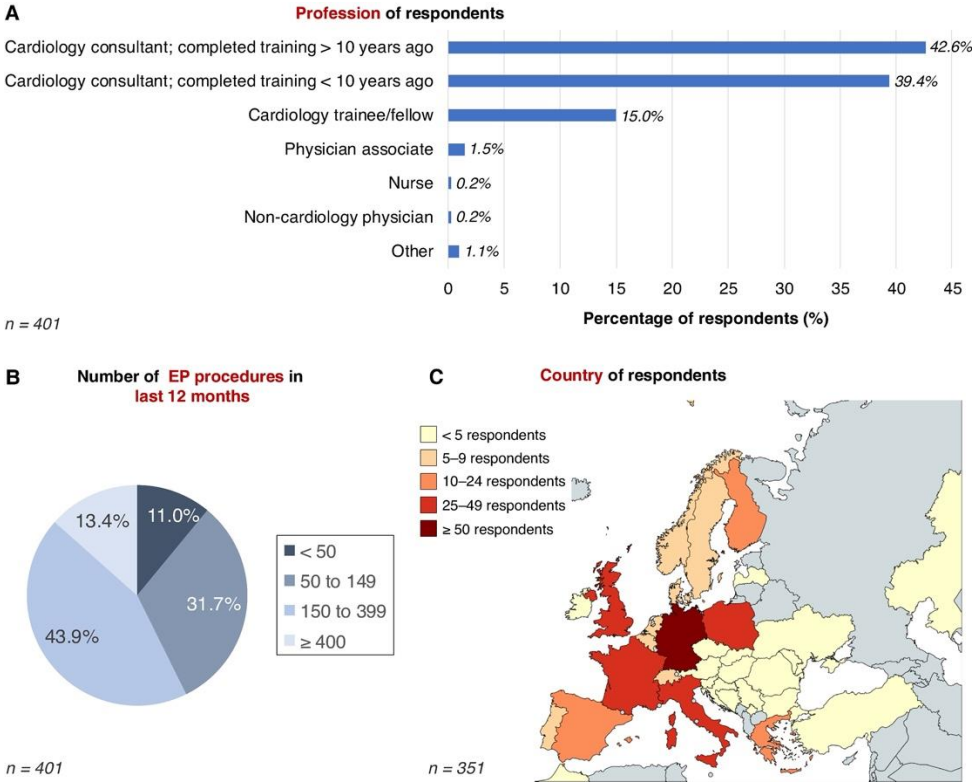
# Latest Survey on Vascular Access Management EHRA-Scientific Initiative Committee

## Vascular access site management during electrophysiology procedures: a European Heart Rhythm Association survey

Mark T. Mills [1,2]*, Dhiraj Gupta [1,2], Vishal Luther [1,2], Maura M. Zylla [3], Piotr Futyma [4], Laura Perrotta [5], Michal Mazurek [6], Christian-Hendrick Heeger [7], Lina Marcantoni [8], Andreas Metzner [9], and Julian K. R. Chun [10]

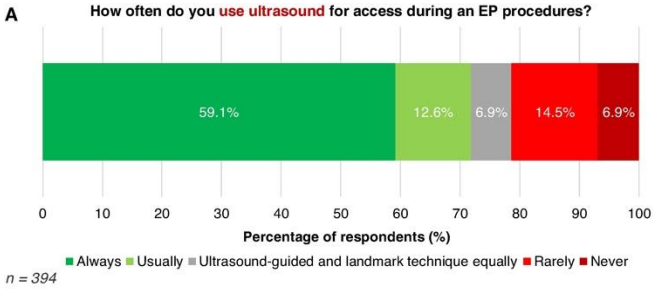
Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.

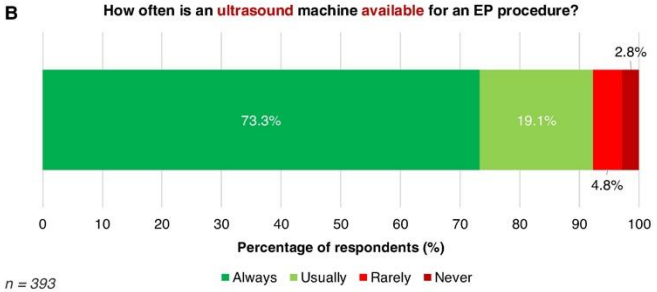
# Demographics of Respondents



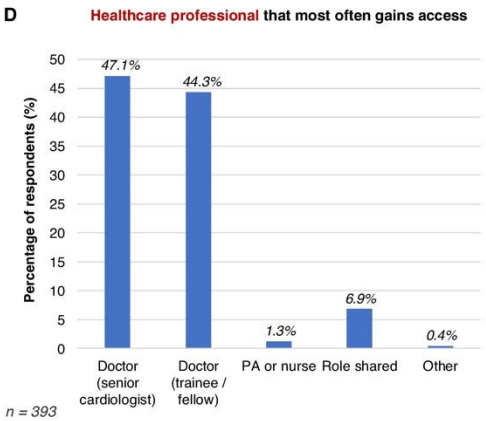

EP = electrophysiology.
Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.

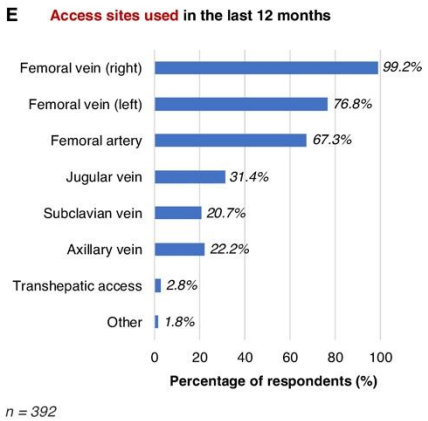
# Vascular Access Management



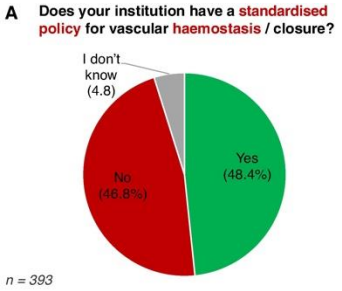


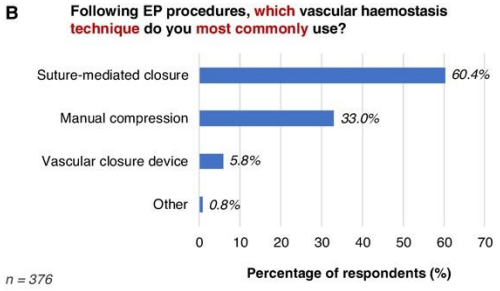


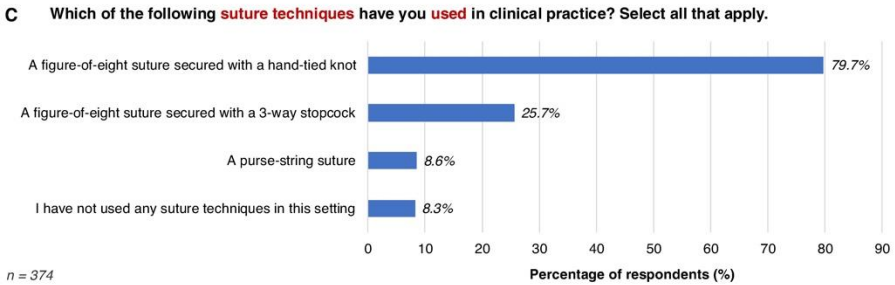



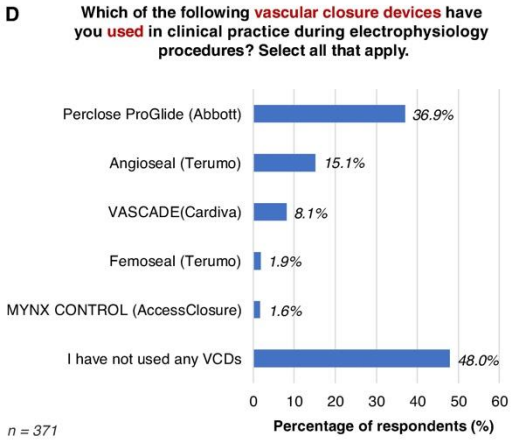

**Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.**

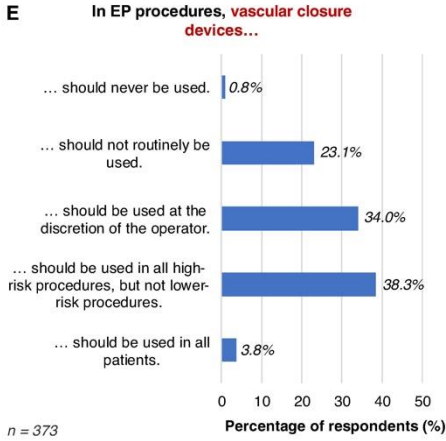
# Vascular Haemostasis and Closure



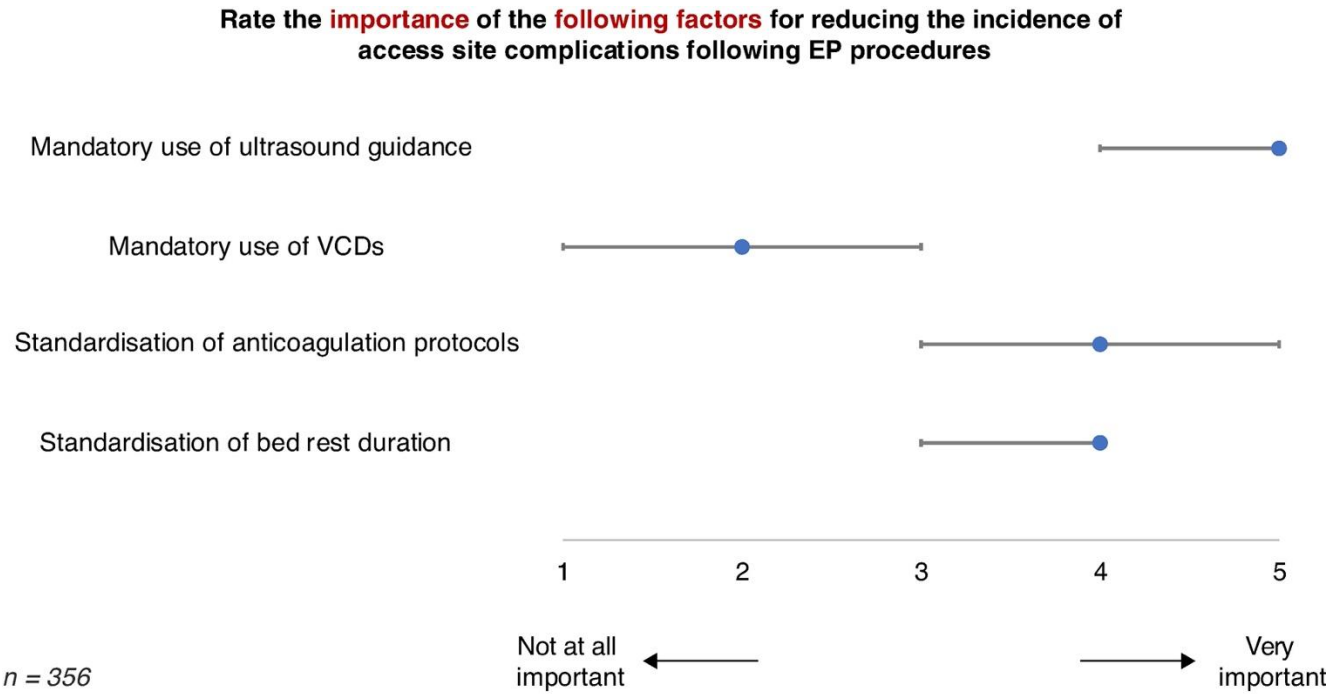



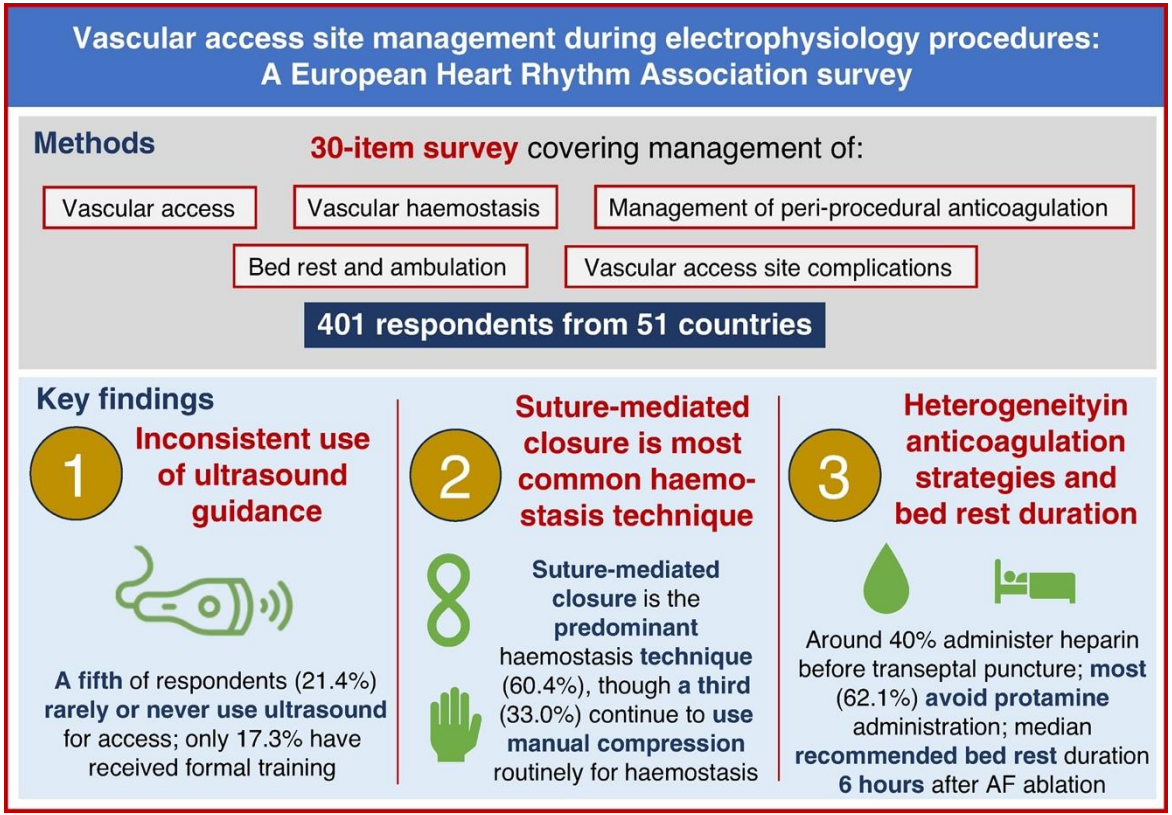

**Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.**

# Importance of Factors in Reducing Vascular Access Site Complications




**VCD = vascular closure device.**
**Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.**

# Vascular Access Management: Survey




Mills MT, et al. *Europace*. 2025 ;27(7):euaf117.

# Suture-Mediated Closure and Repair Device

- Sutures-based closure system
- A. femoralis communis and V. femoralis communis
- Immediate closure of the puncture site
- Robust data: 12 million patients have been treated
- Non-resorbable suture

Arterial usage: 5-26F OD
Venous usage: 5-29F OD

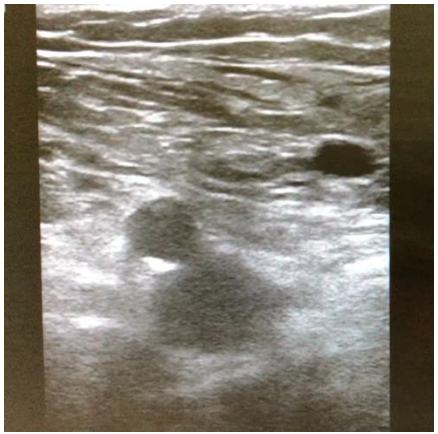
# PRO-PVI Study

- Vascular complications 2-4%
- Ambulation PVI (→ same day discharge)

**What's new?**

- There is still lack of knowledge on the use of vascular devices in the EP field; this paper provides evidence supporting the use of suture-mediated vascular closure in PVI procedures.
- A shorter post-operative supine position was preferred by patients.
- Analysis of costs showed a neutral economical impact of vascular closure device use in PVI.

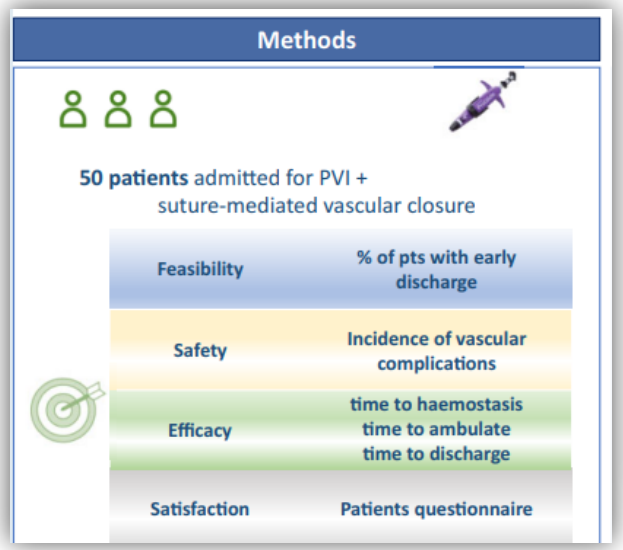
## US-Guided Puncture Femoral Groin



## Vascular Closure Device


Hindricks G, et al. *Eur Heart J*. 2021;42(5):373-498. Fabbricatore D, et al. *Europace*. 2023;25(4):1361-1368.

# Methods: PRO-PVI Study



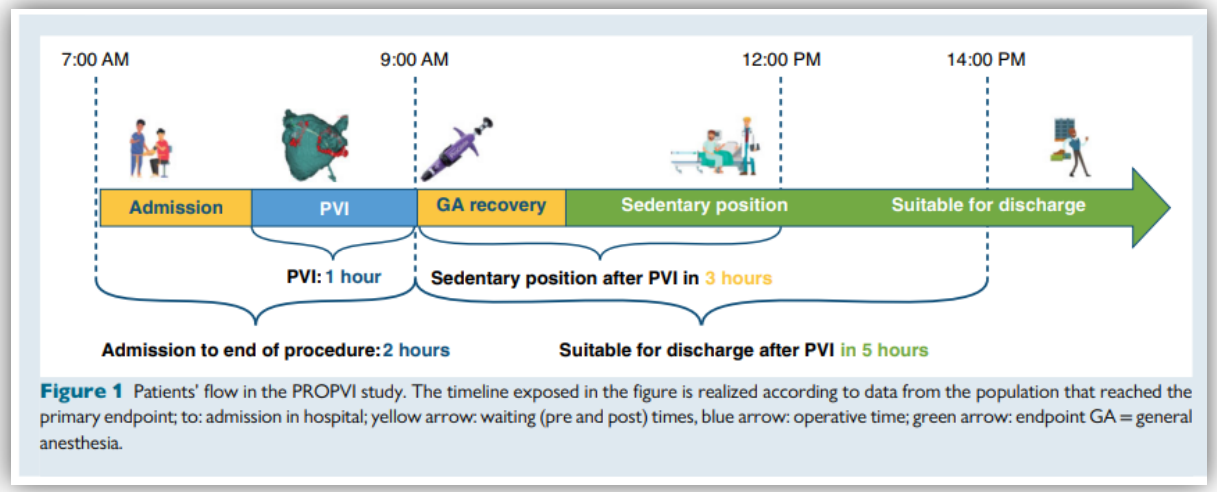




**Figure 1** Patients' flow in the PROPVI study. The timeline exposed in the figure is realized according to data from the population that reached the primary endpoint; to: admission in hospital; yellow arrow: waiting (pre and post) times, blue arrow: operative time; green arrow: endpoint GA = general anesthesia.

**Fabbricatore D, et al. *Europace*. 2023;25(4):1361-1368.**

# Results: PRO-PVI Study

**Table 1** Patient demographic, clinical, and procedural characteristics (overall population)

| Patient demographic, clinical and procedural characteristics | |
|---|---|
| Total population, *n* (%) | 50 (100) |
| Median age (IQr) | 64 (28–80) |
| Male sex, *n* (%) | 38 (76) |
| Median BMI (IQr) | 26.3 (21–42) |
| Hypertension, *n* (%) | 20 (40) |
| DM, *n* (%) | 11 (22) |
| Smokers, *n* (%) | 4 (8) |
| Necessity of protamine administration (%) | 2 (4) |
| Median ACT (s) | 318 (225–355) |

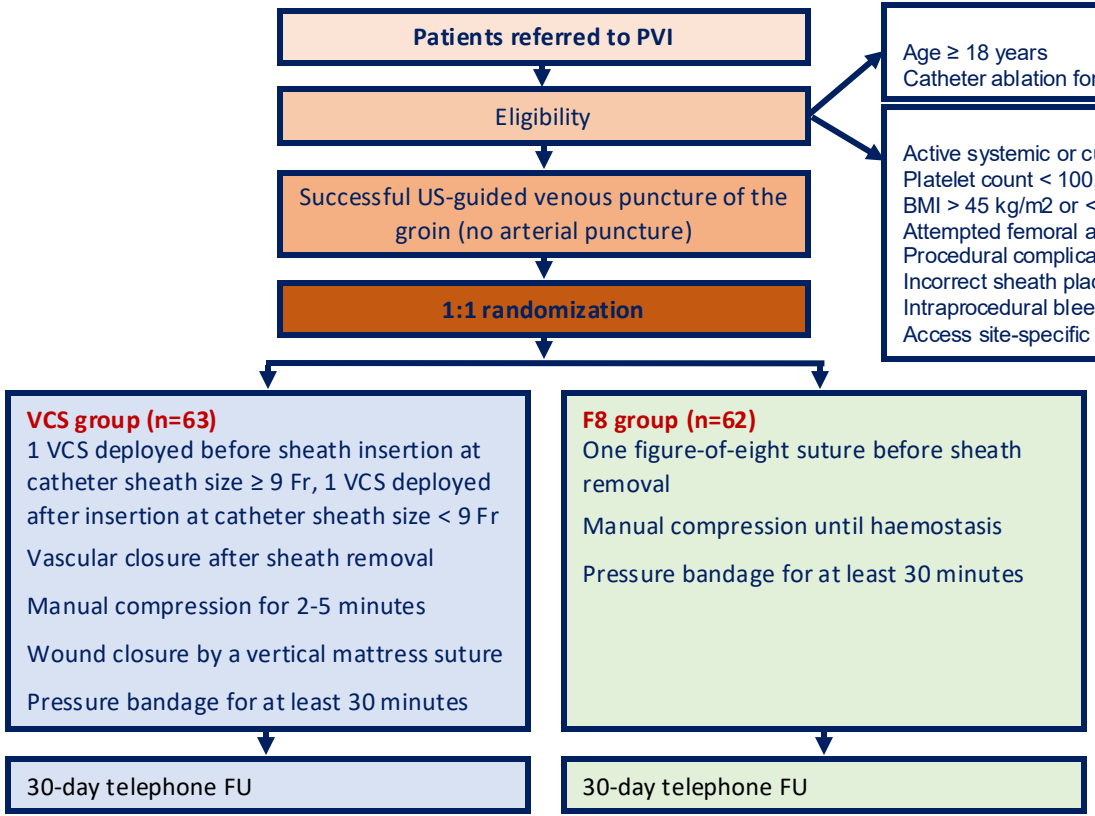
| | |
|---|---|
| Feasibility | % of pts with early discharge |
| Efficacy | time to haemostasis<br>time to ambulate<br>time to discharge |
| Safety | Incidence of vascular complications |

**Table 2** Endpoints and outcomes

| | |
|---|---|
| Total population, *n* (%) | 50 (100%) |
| Primary endpoint | |
| Discharge in the same day, *n* (%) | 48 (96)[a] |
| Outcomes | |
| Success of device deployment, *n* (%) | 96 (100) |
| Necessity of post-deployment manual compression > 1 min, *n* (%) | 20 (41.7) |
| Late recurrence of bleeding, *n* (%) | 2 (4.16) |
| Mean/median time to reach haemostasis (mm:ss)[b] | 4:35 (± 3:27)/3:00 (2:00–15:00) |
| Mean/median time to ambulation (hh:mm)—IQR | 3:18 (± 1:05)/3:11 (1:26–6:23) |
| Mean and median time to be deemed suitable for discharge | 4:55 (±00:54)/4:48 (2:50–7:30) |
| Mean/median post-procedural time to be discharged (hh:mm)—IQR | 5:48 (± 1:03)/5:51 (3:38–7:57) |
| Major vascular complications needing surgical intervention, *n* (%) | 0 (0) |
| Major vascular complications needing further medical evaluation/investigation, *n* (%) | 0 (0) |
| Hematoma > 6 cm, *n* (%) | 3 (6.25) |
| Asymptomatic superficial bruising ≤ 6 cm, *n* (%) | 15 (31.25) |
| Necessity of pain medication, *n* (%) | 3 (6.25) |
| Paracetamol, *n* (%) | 2 (4.16) |
| Single administration, *n* (%) | 1 (2.08) |
| Repeated administration, *n* (%) | 1 (2.08) |
| Salicylic acid, *n* (%) | 1 (2.08) |

**BMI = body-mass index; DM = diabetes mellitus.**
**Fabbricatore D, et al. *Europace*. 2023;25(4):1361-1368.**

# STYLE AF-Study: Methods




**Inclusion criteria**

Age ≥ 18 years
Catheter ablation for AF with up to 2 VA using a 6 to 14 Fr inner diameter introducer sheath

**Exclusion criteria**

Active systemic or cutaneous infection, or inflammation in vicinity of the groin
Platelet count < 100,000 cells/mm3
BMI > 45 kg/m2 or < 20 kg/m2
Attempted femoral arterial access or inadvertent arterial puncture
Procedural complications that interfered with recovery, ambulation, or discharge times
Incorrect sheath placement
Intraprocedural bleeding or thrombotic complications
Access site-specific eligibility criteria to exclude problems with gaining access/location of sheath

**Primary efficacy endpoint**

**Time to ambulation (TTA) = elapsed time between removal of the final closure device or removal of the final sheath and the moment when the patient can stand and walk 20 feet without evidence of venous re-bleeding from the femoral access site.**

**Primary safety endpoint**

**Major periprocedural adverse events = adverse events until hospital discharge requiring medical intervention.**

**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# STYLE AF Results: Baseline Pt Characteristics

| Variable | VCS Group N=63 | F8 Group N=62 | *p* |
|---|---|---|---|
| **Female gender, n (%)** | 25 (39.7%) | 20 (32.3%) | 0.457 |
| **Age, years** | 64.0 (56.0, 74.0) | 68.5 (60.8, 75.3) | 0.146 |
| **Body mass index, kg/m2** | 29.4 ± 5.6 | 27.5 ± 4.7 | 0.042 |
| **Arterial hypertension, n (%)** | 40 (63.5%) | 36 (58.1%) | 0.585 |
| **Coronary artery disease, n (%)** | 15 (23.8%) | 15 (24.2%) | 1 |
| **Cardiomyopathy, n (%)** | 7 (11.1%) | 8 (12.9%) | 0.789 |
| **LVEF, n (%)** | 55 (54.5, 60.0) | 55.0 (52.0, 60.0) | 0.829 |
| **Oral anticoagulation, n (%)** | 60 (95.2%) | 56 (90.3%) | 0.323 |
| **Direct oral anticoagulation, n (%)** | 59 (93.7%) | 52 (83.9%) | 0.096 |
| **Antiplatelet therapy, n (%)** | 4 (6.3%) | 3 (4.8%) | 1 |
| **CHA2DS2-VASc ≥3** | 25 (39.7%) | 27 (43.5%) | 0.718 |
| **HAS-BLED ≥3** | 14 (22.2%) | 7 (11.3%) | 0.150 |

**LVEF = left ventricular ejection fraction; CHA2DS2-VASc = congestive heart failure, hypertension, age ≥75 (doubled), diabetes, stroke (doubled), vascular disease, age 65-74, and sex category (female)**

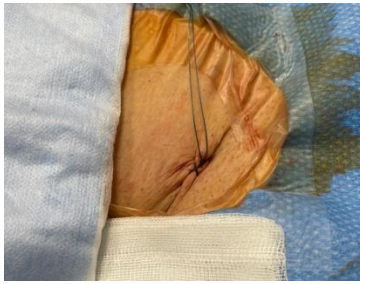
**Tilz RR, et al. *Europace*. 2024;26(5):euae105**

# STYLE AF Results: Procedural Characteristics

| Variable | | VCS Group N=63 | F8 Group N=62 | *p* |
|---|---|---|---|---|
| **Energy source** | Cryoballoon, n (%) | 51 (81.0%) | 49 (79.0%) | 0.826 |
| | PFA, n (%) | 11 (17.5%) | 9 (14.5%) | 0.808 |
| | Laser, n (%) | 1 (1.6%) | 1(1.6%) | 1 |
| | RF, n (%) | 0 (0.0%) | 3 (4.8%) | 0.119 |
| **Number of punctures** | 1, n (%) | 9 (14.3%) | 8 (12.9%) | 1 |
| | 2, n (%) | 54 (85.7%) | 52 (83.9%) | 0.808 |
| | 3, n (%) | 0 (0.0%) | 2 (3.2%) | 0.243 |
| **Procedure duration, min** | | 48.0 (40.0, 59.0) | 48.0 (36.5, 59.3) | 0.481 |
| **Amount of heparin, UI** | | 12500 ± 3349.3 | 12532.3 ± 2785.9 | 0.953 |
| **Protamine use, n (%)** | | 3 (4.8%) | 6 (9.7%) | 0.323 |
| **Amount of protamine, UI** | | 7000 (5000, -) | 7000 (6500, 7750) | 0.440 |
| **VCS failure, n (%)** | | 2 (3.2%) | | |

**VCS = vasculitis; PFA = pulsed field ablation.**
**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# STYLE AF Results: Primary Endpoints (EP)

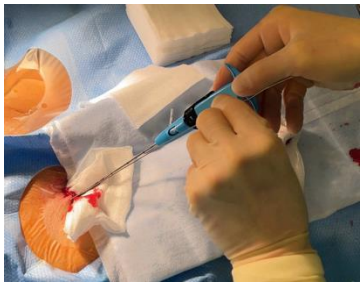


| | VCS Group n=63 | F8 Group n=62 | *p* |
|---|---|---|---|
| Primary efficacy EP<br>Time to ambulation | 109.0 (82.0, 160.0) | 269.0 (243.8, 340.5) | <0.001 |
| Primary safety EP<br>Major periprocedural AE until discharge | 0 (0%) | 0 (0%) | 0.999 |

**AE = adverse event.**

**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# STYLE AF Results: Secondary Endpoints



| | VCS Group n=63 | F8 Group n=62 | *p* |
|---|---|---|---|
| Time to haemostasis, min | 1 (1, 2) | 5 (2, 10) | <0.001 |
| Time to discharge eligibility, min | 270 (270, 270) | 340 (300, 458) | <0.001 |
| Major VA related complications, n (%) | 0 (0%) | 0 (0%) | |

**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# STYLE AF Results: Minor Complications and Comfort Questionnaires

| Complications present on the day of procedure and the day after that (total) | | | |
|---|---|---|---|
| **Variable** | **VCS Group** | **F8 Group** | ***p*** |
| **Patients with complications, n (%)** | 13 (20.6%) | 22 (35.5%) | 0.075 |
| **Groin haematoma >6 cm, n (%)** | 2 (3.2%) | 1 (1.6%) | 1 |
| **Groin haematoma <6 cm, n (%)** | 6 (9.5%) | 15 (24.2%) | 0.033 |
| **Bleeding, n (%)** | 6 (9.5%) | 8 (12.9%) | 0.584 |
| **Haemoglobin drop, n (%)** | 0 (0.0%) | 1 (1.6%) | 0.496 |
| **Groin pain, n (%)** | 16 (25.4%) | 21 (33.9%) | 0.332 |

| Comfort questionnaire - all patients | | | |
|---|---|---|---|
| **Question** | **VCS Group** | **F8 Group** | ***p*** |
| **How satisfied are you with the lying time you had to spend on your back?** | 9.0 (6.0, 10.0) | 7.0 (5.0, 8.0) | 0.016 |
| **How comfortable was it for you to have to lie on your back?** | 8.0 (4.0, 9.8) | 6.5 (5.0, 8.0) | 0.312 |
| **How severe was the pain when you had to lie on your back?** | 1.0 (0.0, 3.0) | 1.0 (0.0, 3.0) | 0.588 |

**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# STYLE AF Conclusions

- Following AF ablation, the use of a VCS results in a significantly shorter time to ambulation, time to haemostasis, and time to discharge eligibility
- No major vascular access related complications were identified
- The use of MC and a figure-of-eight suture showed a trend towards a higher incidence of minor vascular access related complications

**Tilz RR, et al. *Europace*. 2024;26(5):euae105.**

# A Venous Vascular Closure System Device Was Evaluated in 5 EP Clinical Trials: VASCADE MVP

**AMBULATE**
**Pivotal Trial**

Pivotal for FDA approval

JACC EP: Natale et al. Oct 2019

**AMBULATE CAP**
**Continued Access Protocol**

JCE: Al-Ahmad et al. Jan 2021

**AMBULATE**
**Same Day Discharge Clinical Studies**

Retrospective SDD

Prospective SDD 1

Prospective SDD 2

JCE: Eldadah et al. Nov 2022

| | |
|---|---|
| Access Sites | **3,788** |
| Patients | **1,223** |

**0%**

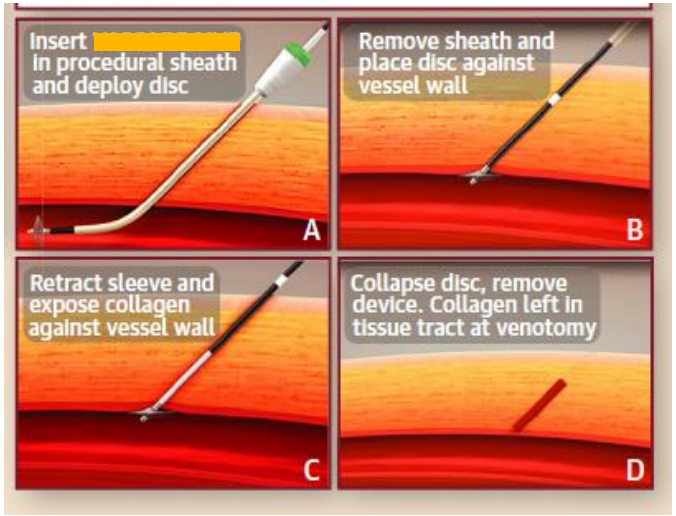
Major Complications[a]

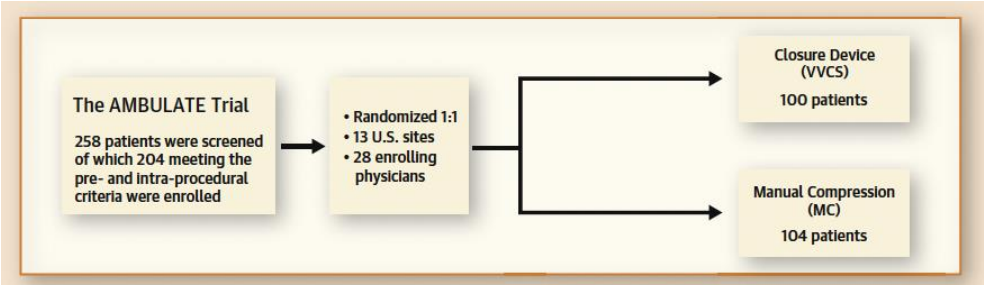
**[a]Major and minor complications definitions may vary for each study, refer to the publication for specific definitions.**

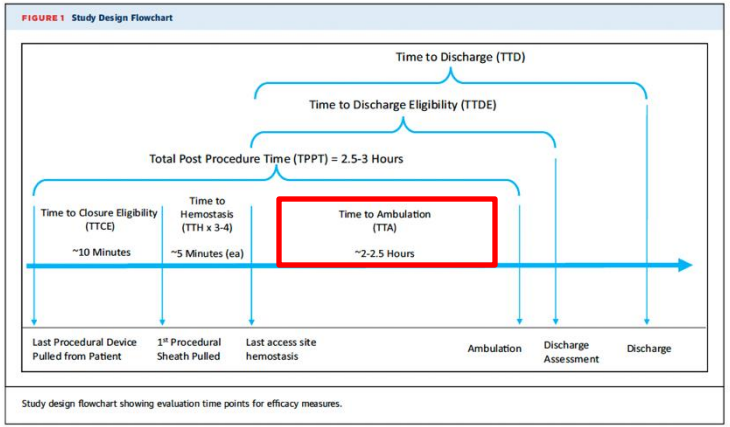
**Natale A, et al. *JACC Clin Electrophysiol*. 2020;6(1):111-124. Al-Ahmad A, et al. *J Cardiovasc Electrophysiol*. 2021;32(2):191-199. Eldadah ZA, et al. *J Cardiovasc Electrophysiol*. 2023;34(2):348-355. National Institute of Health. Accessed August 25, 2025. https://clinicaltrials.gov/study/NCT04538781?tab=table.**

# AMBULATE Trial

## Venous Vascular Closure System Versus Manual Compression Following Multiple Access Electrophysiology Procedures



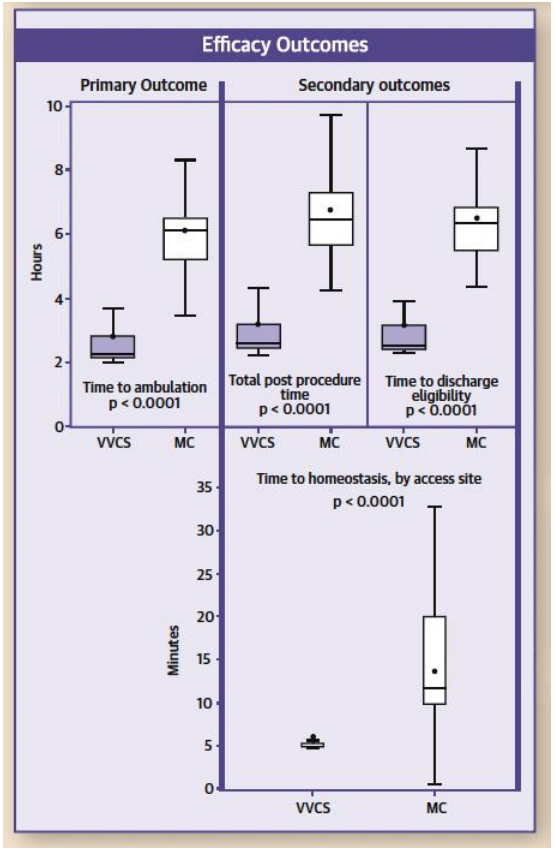

Natale A, et al. *JACC Clin Electrophysiol*. 2020;6(1):111-124.

# AMBULATE Trial: Findings

| Safety and Pain Medication Usage Outcomes | VVCS Device | Manual Compression (MC) | p-value |
|---|---|---|---|
| **Primary Safety Outcomes, per limb** | | | |
| Major access site closure-related complication | 0(0.00%) | 0(0.00%) | - |
| **Secondary Safety Outcomes, per limb** | | | |
| Minor access site closure-related complication | 2(1.00%) | 5(2.40%) | 0.45 |
| **Pain Medication Usage During Bedrest** | | | |
| Any pain medication | 24(24%) | 51(49%) | 0.0003 |
| Opioid narcotic | 15(15%) | 37(36%) | 0.001 |
| No pain medication | 76(76%) | 53(51%) | - |

*Data are presented as n (%)*

*p-values from one-sided t-test for means, and one-sided Wilcoxon rank sum test for medians, unadjusted for stratification factor*

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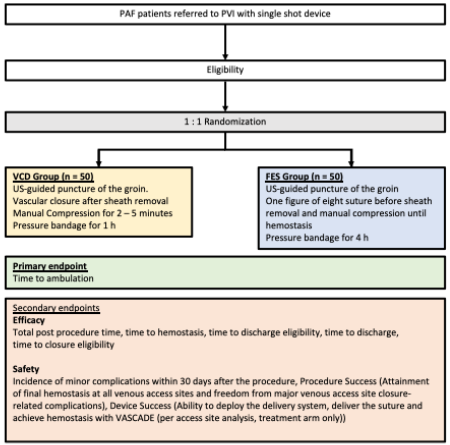
# Future: Vascular Closure Devices

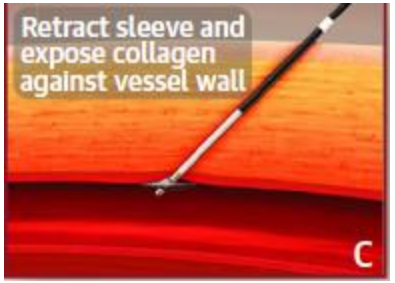
- Device with 58% more collagen and 9% increase in disc size, 15F outer diameter
- VASC-AF study: For single-shot EP procedures (ongoing)
- Device for large access sites




# Workflow Changes: VCDs

- Before introduction of VCS
  - Figure of 8 + 8h pressure bandage
  - Removal of stitches on the next day
  - Painful for patients and staff

- Afterwards
  - Device + 2h pressure bandage
  - No removal of stitches
  - Happy patients, nurses, and physicians
  - Same day discharge ready!

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# Future Outlook and Impact of Vascular Closure Devices Conclusion

- Most complications during EP procedures are related to vascular access
- Immediate haemostasis with closure devices
- US-guided puncture in combination with venous closure systems: Shorter time to ambulation and time to discharge elegibility
- Ready for same day discharge!

# Thank You Very Much!

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CardioVascular Learning Network | CME

# Regulatory Updates and System-Level Changes: Review of Recent Regulatory and Reimbursement Changes Relevant to SDD in EP Labs

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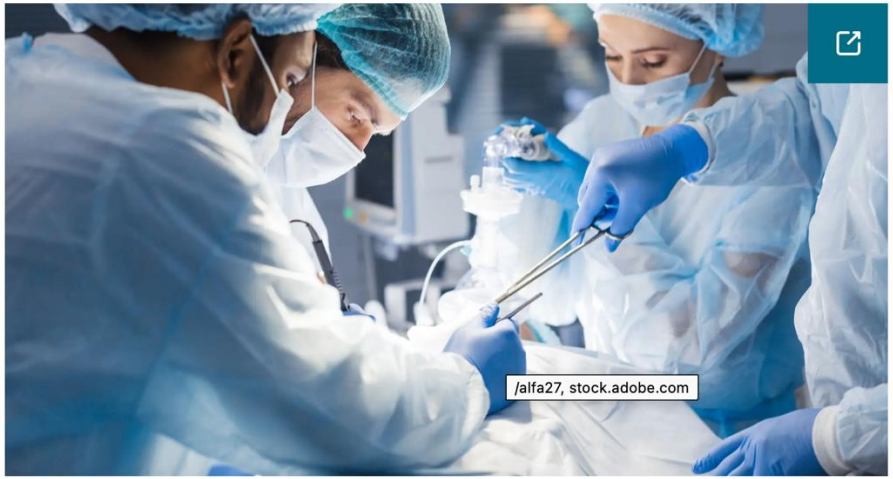
Klinik für Rhythmologie, UHZ Lübeck

Deutsches
Ärzteblatt

Ärzteschaft

# Vorgaben zur Kalkulation der Hybrid-DRG 2026 beschlossen

Donnerstag, 10. Juli 2025

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# Development of Hospital Reimbursement in Germany

- Until 2003
  - General hospital services reimbursed via hospital-specific daily rates
  - Payment per hospital day, independent of actual treatment effort
- 2003 – introduction of DRGs
  - Payment based on case groups, reflecting diagnosis and treatment effort
  - Incentive to increase efficiency and reduce length of stay
  - Established as the standard reimbursement system in hospitals

# Development of Hospital Reimbursement in Germany

- 2024 – Introduction of Hybrid DRGs
  - With the April 2025 decision, the Hybrid DRG Catalog 2026 is shaping
  - Immediate implementation: Hospitals must already begin reassessing their service structures to reduce costs for short stay patients
  - Covers at least one million cases annually from 2026
    - In 2030, 2 million cases planned
  - Applies to services with short length of stay (≤2 days)
  - Recognized as “outpatient-equivalent inpatient” and reimbursed accordingly – what matters is not the location of care, but its efficiency, quality, and economic viability
  - Reimbursement: Mandatory same lump-sum payment (=DRG!) for hospitals and contract physicians, but with a big deduction (average so far 30% -40%) compared to in-patient reimbursement!

# Hybrid DRGs

- Hybrid DRGs are not a new concept – the term has shaped discussions on cross-sector care and outpatient treatment in hospitals for years
- New development (April 30, 2025 decision): The “Beschluss des Bewertungsausschusses” fundamentally changes the system
  - For the first time: A mandatory catalog is introduced, covering at least one million cases annually – billable as outpatient or inpatient with short length of stay
  - This turns a structural policy signal into a direct mandate for hospitals
  - Underlying logic: Services with short length of stay (generally up to two days) are now considered “outpatient-equivalent inpatient” – and reimbursed accordingly
  - This challenges traditional DRG processes, requires new calculation models, and forces hospitals to reassess their service spectrum

# What Does “Outpatient-Equivalent Inpatient” (Ambulant Aquivalent Stationär) Mean?

- Services listed in the hybrid DRG catalog with a length of stay of usually up to two days will be considered billable as outpatient – even if performed in an inpatient setting
- The decisive factor is not the place of service, but the combination of catalog assignment and short length of stay
- This represents a fundamental change in the traditional DRG system

# What Exactly Is Included in the Hybrid DRG Catalog 2026?

- The new catalog covers at least one million cases per year – treated outpatient or short-stay inpatient
  - Concept: Those who deliver services quickly, efficiently, and without unnecessary bed occupancy will be reimbursed equally
  - One million cases. Outpatient or short-stay. Starting in 2026
  - It is no longer just about “outpatient before inpatient” – but increasingly about “outpatient-equivalent inpatient.”
  - What matters is not the location of care, but its efficiency, quality, and economic viability
  - With the April 2025 decision, the hybrid DRG Catalog 2026 is finalized
  - Immediate implementation: Hospitals must already begin reassessing their service structures

# Impact on Costs

$$Hybrid_{DRG} = \left(\frac{Fallzahl_{Praxis} + Fallzahl_{115b}}{Fallzahl_{gesamt}}\right) * Fallwert_{Praxis} + \left(\frac{Fallzahl_{stationär}}{Fallzahl_{gesamt}}\right) * Fallkosten_{stationär}$$

$$+ Sach\text{- und Laborkosten ausschließlich Implantat-/Transplantatkosten}_{stationär}$$

$$+ Implantat\text{-/Transplantatkosten}_{stationär}$$

- Material costs and costs for implants are excluded from the existing DRG before the adjustment for new hybrid DRG are applied
- 2024 DRG costs are adjusted to year 2026 (inflation)
- Adjusted 2024 costs are placed back into the new hybrid DRGs
- We start with same m… DRGs

$$Hybrid_{DRG} = \left(\frac{Fallzahl_{ambulant}}{Fallzahl_{gesamt}}\right) * Fallwert_{ambulant} + \left(\frac{Fallzahl_{KH}}{Fallzahl_{gesamt}}\right) * Fallkosten_{KH}$$

$$+ Sach\text{- und Laborkosten ausschließlich Implantat-/Transplantatkosten}_{KH}$$

$$+ Implantat\text{-/Transplantatkosten}_{KH}$$

# Hybrid DRGs 2026: Ablation Procedures

| | | |
|---|---|---|
| **F50M** | **F50A** | Ablations for arrhythmias with highly complex ablation in the left atrium, ventricle, or pulmonary veins |
| **F50N** | **F50B** | Ablations for arrhythmias with complex ablation |
| **F50O** | **F50C** | Ablations for arrhythmias (general) |

- The current 15% revenue reduction for 1-day cases (one overnight stay) in DRGs F50A, F50B, F50C will be reversed
- Revenues for these DRGs will increase again for 1-day cases
- However, only ~5% of current 1-day cases are expected to benefit
- Estimated DRG-decline is much smaller, because of the exclusion of the material/implants costs from out-patient deduction & and zero out-patient-cases

# Top 10 Hybrid-DRGs, Based on Simulated Cases

| Hybrid-DRG | Bezeichnung der Hybrid-DRG | Bezeichnung der "Mutter"-DRG | Fallzahl in §-21-Daten 2024 |
|---|---|---|---|
| G24Q | Hybrid-DRG 2 der DRG G24D | Eingriffe bei Hernien ohne plastische Rekonstruktion der Bauchwand, ohne beidseitigen Eingriff, ohne komplexen Eingriff, Alter > 17 Jahre | 105.601 |
| F50M | Hybrid-DRG der DRG F50A | Ablative Maßnahmen bei Herzrhythmusstörungen mit hochkomplexer Ablation im linken Vorhof, Ventrikel oder Pulmonalvenen [...] | 70.749 |
| F49R | Hybrid-DRG 2 der DRG F49F | Invasive kardiolog. Diagnostik außer bei akutem Myokardinfarkt, o. äußerst schwere CC, ohne IntK > 196 / 184 / 368 P., Alter > 17 J., o. kard. Mapping, o. best. and. kard. Diagnostik, [...] | 66.891 |
| H08M | Hybrid-DRG der DRG H08C | Laparoskopische Cholezystektomie oder bestimmte Eingriffe an Leber und Bauchwand, [...] | 66.283 |
| L20N | Hybrid-DRG der DRG L20C | Transurethrale Eingriffe außer Prostataresektion und komplexe Ureterorenoskopien oder bestimmte Eingriffe an den Harnorganen, ohne äußerst schwere CC oder [...] | 58.744 |
| F58N | Hybrid-DRG 2 der DRG F58B | Perkutane Koronarangioplastie oder bestimmte kardiologische Diagnostik mit Gefäßeingriff, ohne äußerst schwere CC | 57.048 |
| L20M | Hybrid-DRG der DRG L20B | Transurethrale Eingriffe außer Prostataresektion und komplexe Ureterorenoskopien oder bestimmte Eingriffe an den Harnorganen, ohne äußerst schwere CC oder [...] | 57.031 |
| I21M | Hybrid-DRG der DRG I21Z | Lokale Exzision [...] oder komplexe Eingriffe an Ellenbogengelenk und Unterarm oder bestimmte Eingriffe an der Klavikula | 52.628 |
| G26N | Hybrid-DRG der DRG G26B | Andere Eingriffe am Anus oder Anoproktoplastik und Rekonstruktion von Anus und Sphinkter bei Analfissuren und Hämorrhoiden, Alter > 17 Jahre, [...] | 36.680 |
| N25M | Hybrid-DRG der DRG N25Z | Andere Eingriffe an Uterus und Adnexen oder bestimmten Hernien außer bei bösartiger Neubildung, ohne komplexe Diagnose oder [...] | 32.995 |

EP

Coro

PCI

(green = new)

# EP Exclusion Criteria

- Cases in F50A with implantation of an event recorder were excluded from Hybrid-DRG F50A
- Reason: Cases with the combination “ablation plus event recorder” in this DRG generally show corresponding NUB payments
- This exclusion was not implemented via context factors, because the procedure implantation of an event recorder is not a NUB service outside this DRG

# Hybrid DRGs 2026: Ablation Procedures

- All ablation procedures, regardless of type or location, could fall under a Hybrid DRG
- Initially excluded (eg, PFA procedures) now appear to be included
- Cases with 1- or 2-day stays can be grouped into hybrid DRGs
- From 2026 onwards, ~70% of ablation cases are expected to be billed under hybrid DRGs
- Exact reimbursement levels are still uncertain

# Hybrid DRGs 2026: Open Points

- Finalized Hybrid DRG catalog and detailed OPS code list
- Specific procedure grouping rules per hybrid DRG
- Definition of context factors (criteria excluding cases from hybrid DRGs)
- Final revenue levels/reimbursement rates for each hybrid DRG

# Conclusions: Hybrid DRGs: Outlook 2026 (Cardiology)

- Hybrid DRGs will come on January 2026
- Further details are expected to be published after September 26, 2025
- Material and implant costs are excluded from outpatient deductions
- The deduction per hybrid DRG is minimal (simulation: ~3–6%)
- The political savings target of €0.5 billion is unlikely to be achieved
- Further adjustments (and delays) are expected!

# Thank You.