

ANTICOAGULANT & VALVE

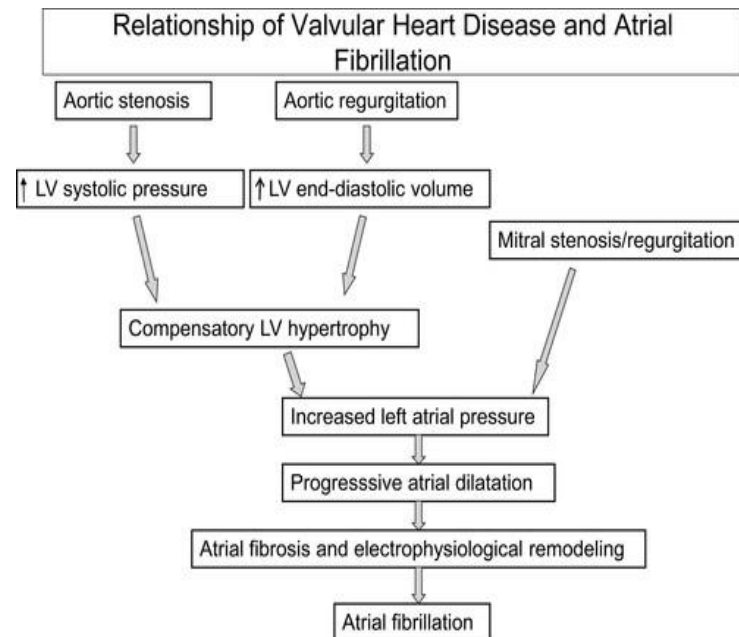
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- ▶ Valvular Atrial fibrillation
- ▶ Prosthetic Valve
 - I. Anticoagulant
 - II. Warfarin toxicity
 - III. Thrombus in prosthesis
 - IV. Prosthesis and surgery

- ▶ VHD is independently associated with AF
- ▶ more than one third of patients with AF have some form of VHD

Valve ad AF

► AF → LA enlargement → dilatation
MV anulus → Atrial functional MR&TR






► Which patients with valvular disease , need anticoagulants?

Valvular AF

- ▶ Esc: AF (prosthesis valve / Moderate to severe MS)
- ▶ AHA: AF+ (prosthesis valve / MS)

- ▶ It is important to note that the CHADS₂ risk score was developed for patients with nonvalvular AF.
- ▶ Thus, for patients with valvular AF, the CHADS₂ score does not apply.

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- ▶ valvular AF : should receive systemic anticoagulation to prevent thromboembolic events
 - ▶ there is **no evidence** that the presence of other VHDs (MR;AI;AS) should modify the choice of OAC.

MS & AF

- ▶ AF frequently complicates rheumatic mitral valve disease, developing in at least 30% to 40% over long-term follow-up in early studies of medically treated patients

ESC



MS

AHA



Sinus ;MS

- ▶ In patients in sinus rhythm, **OAC** is recommended when
 - 1) there has been a history of systemic embolism
 - 2) a thrombus is present in the LA
 - 3) TOE shows dense spontaneous echocardiographic contrast
 - 4) enlarged LA (M-M diameter >50 mm or LAVi >60 mL/m²)

MS and anticoagulant(ESC2021)

► Sinus: OAC if embolism ;LA thrombus ; echo contrast ;enlarged LA

AF

Mild : (NOAC & OAC)

Mod-severe:OAC

- ▶ Patients with moderate-to-severe mitral stenosis and AF should be kept on VKA and not receive NOACs
- ▶ target (INR) between 2 and 3 is indicated in patients with AF.

MS and anticoagulant(AHA 2020)

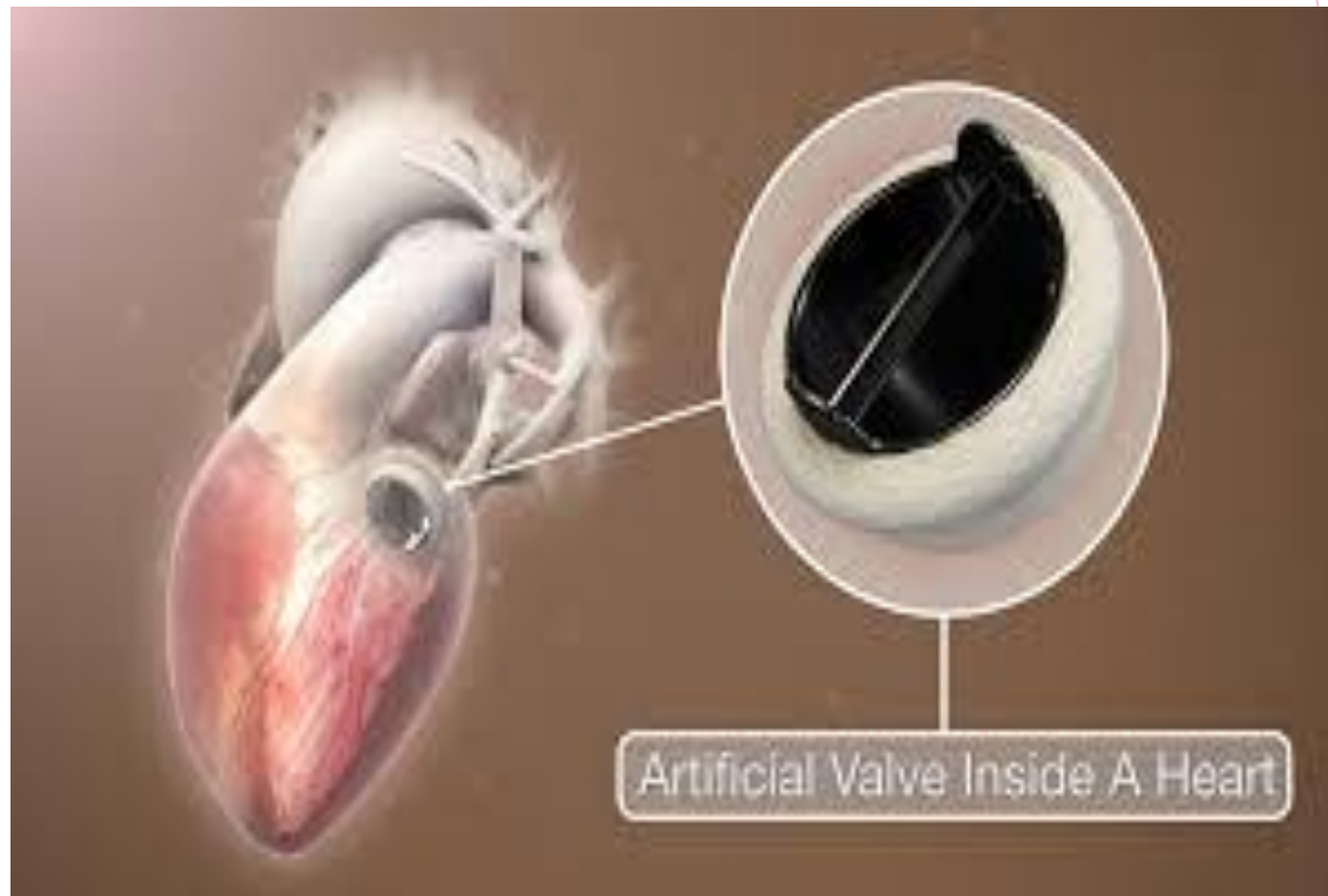
- ▶ It is controversial whether long-term anticoagulation should be given to patients with
- ▶ **rheumatic MS in normal sinus rhythm** on the basis of LA enlargement or spontaneous contrast on TEE.

1	C-LD	1. In patients with rheumatic MS and 1) AF, 2) a prior embolic event, or 3) an LA thrombus, anticoagulation with a VKA is indicated. ¹⁻⁷
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Non-vitamin K oral anticoagulation has not been studied in patients with rheumatic MS

- ▶ If AF is of recent onset and the LA is only moderately enlarged, cardioversion should be performed soon after successful intervention,
- ▶ It should also be considered in patients with less than severe mitral stenosis.

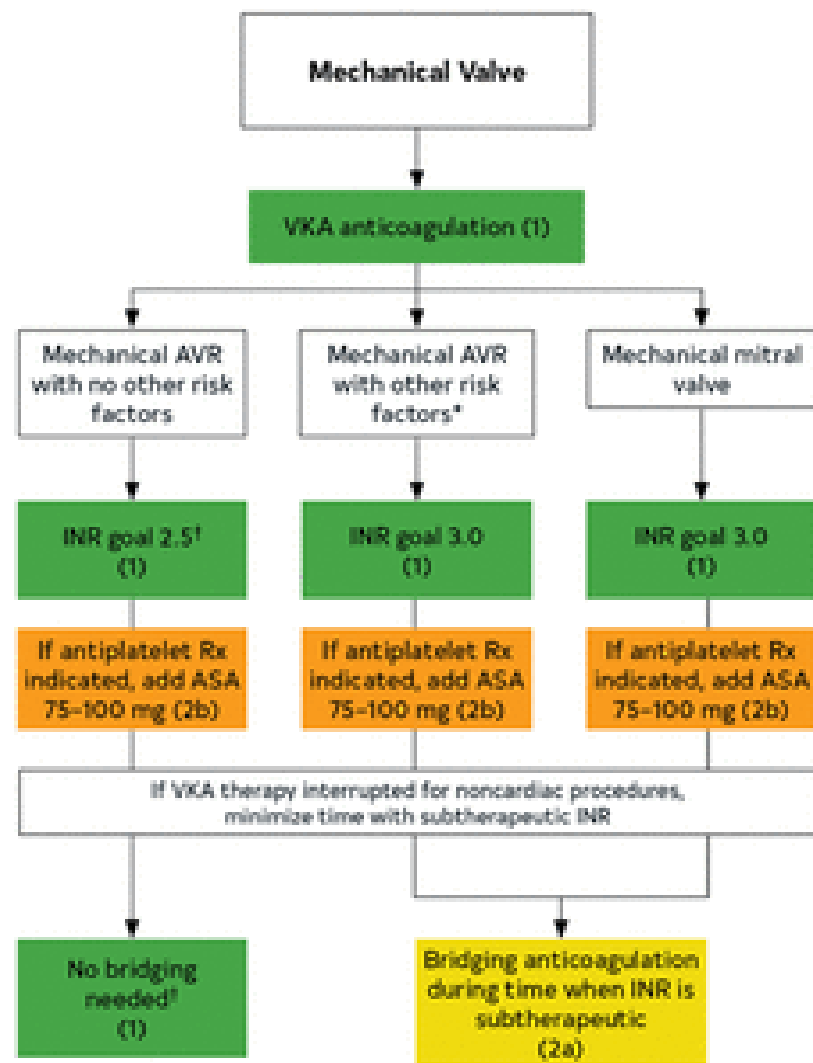
Prosthesis valve



anticoagulation management in prothesis valve

- ▶ MHV
- ▶ BHV
- ▶ repiar

- ▶ MHVs require lifelong treatment with VKA guided by the INR.
- ▶ NOACs currently have no role in patients with MHVs.
- ▶ Treatment with VKA should be started on the first postoperative day in combination with bridging therapy [with therapeutic doses of either unfractionated heparin (UFH) or off-label use of low-molecular-weight heparin (LMWH)] until therapeutic INR is achieved.
- ▶ Similar safety and efficacy outcomes have been reported following bridging with either UFH or LMWH.
- ▶ Once a stable therapeutic INR is reached for ≥ 24 h, bridging can be discontinued.

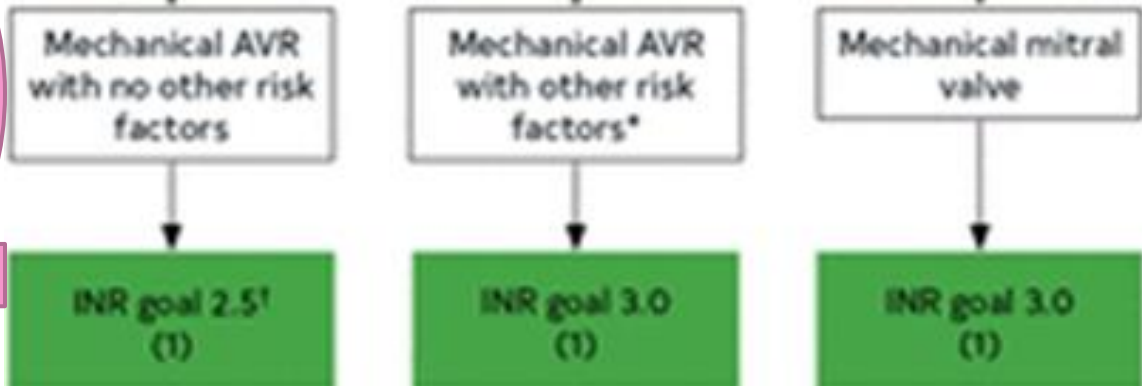


© Thromboembolic risk factors include an older-generation valve, AF, previous thromboembolism, hypercoagulable state, and LV systolic dysfunction.

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Therapeutic INR range

AHA



ESC

Table 10 Target international normalized ratio for mechanical prostheses

Prosthesis thrombogenicity	Patient-related risk factors ^a	
	None	≥1 risk factor
Low ^b	2.5	3.0
Medium ^c	3.0	3.5
High ^d	3.5	4.0

AF=atrial fibrillation; LVEF=left ventricular ejection fraction.

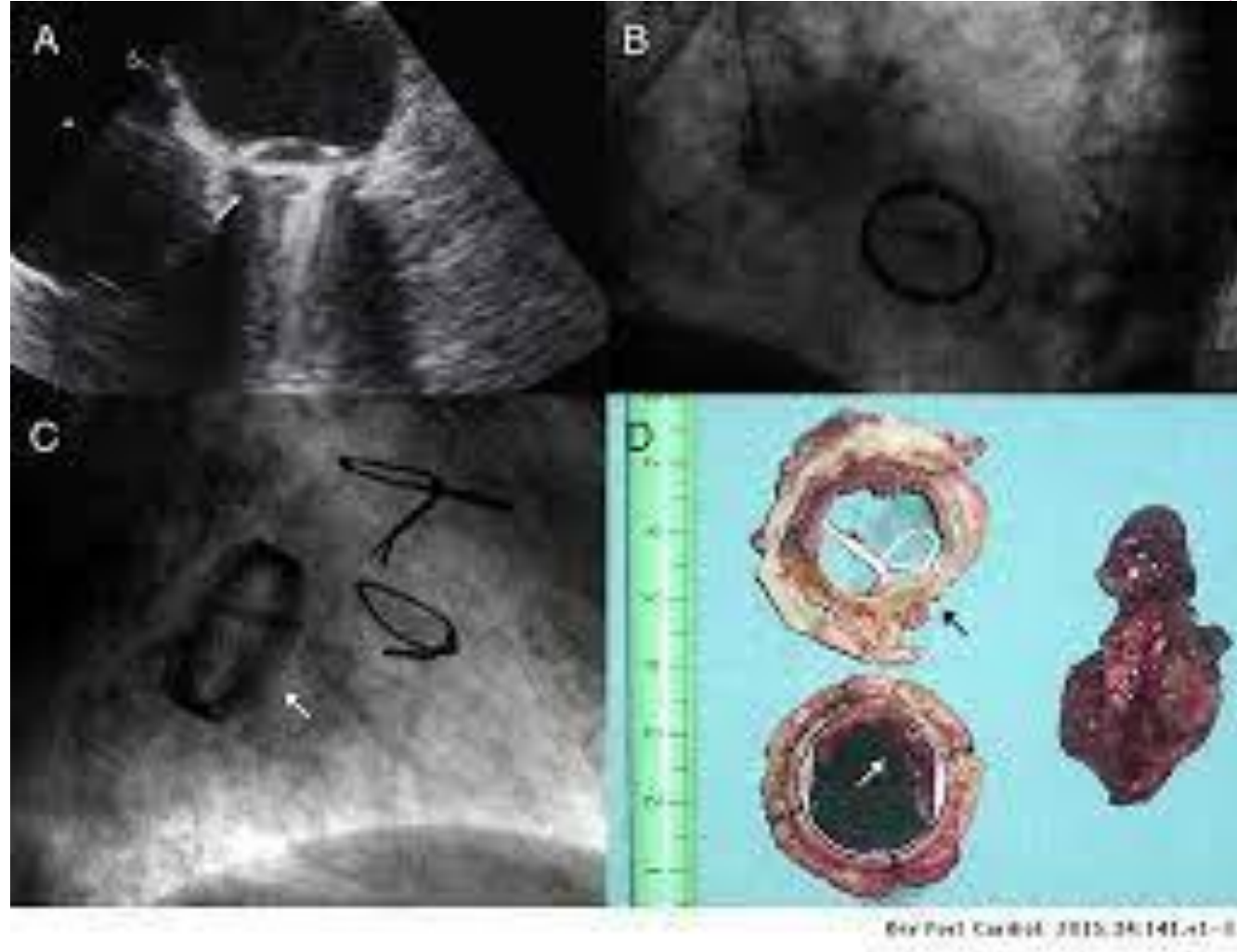
- a Mitral or tricuspid valve replacement; previous thromboembolism; AF; mitral stenosis of any degree; LVEF <35%.
- b Carbomedics, Medtronic Hall, ATS, Medtronic Open-Pivot, St Jude Medical, Sorin Bicarbon.
- c Other bileaflet valves with insufficient data.
- d Lillehei-Kaster, Omniscience, Starr-Edwards (ball-cage), Bjork-Shiley and other tilting-disc valves.

ASA+ Warfarin???

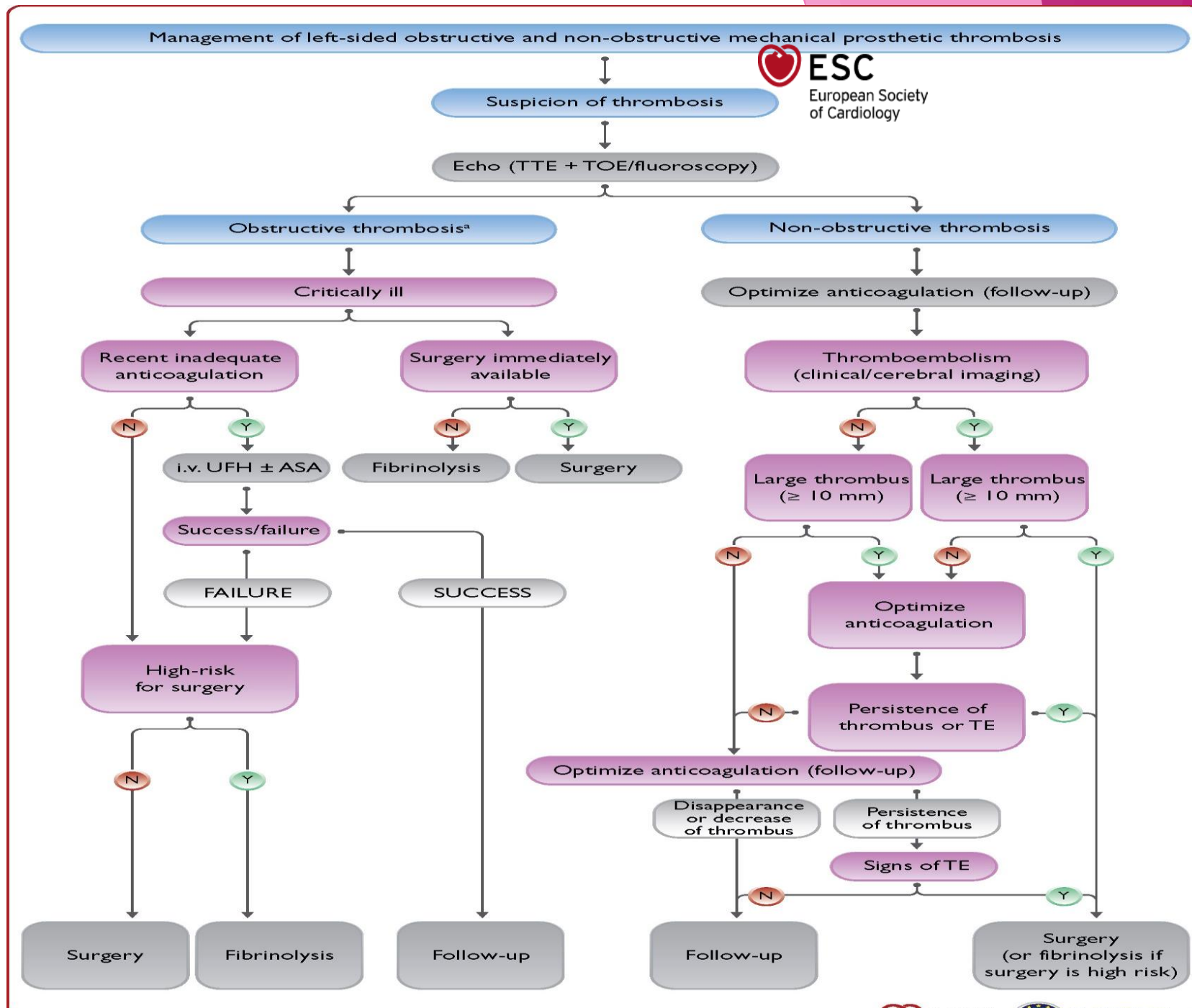
addition of antiplatelets to VKAs should be reserved for patients at very high risk of thromboembolism where advantages clearly outweigh the risks.

In patients with thromboembolism despite adequate INR, low dose (75–100 mg) ASA should be added to VKAs.

left-sided obstructive and non-obstructive mechanical prosthetic thrombosis



Management of left-sided obstructive and non-obstructive mechanical prosthetic thrombosis. ...



ESC

MHV

BHV

Heparin or warfarin(class I)



► Obstructive:

1. Low INR: Anticoagulant
2. Normal INR: Fibrinolysis or surgery



► non-obstructive:

1. +thromboemboli

Large: Fibrinolysis or surgery

Small: Anticoagulant

2. _thromboemboli

Large: Anticoagulant

Bioprosthetic thrombosis

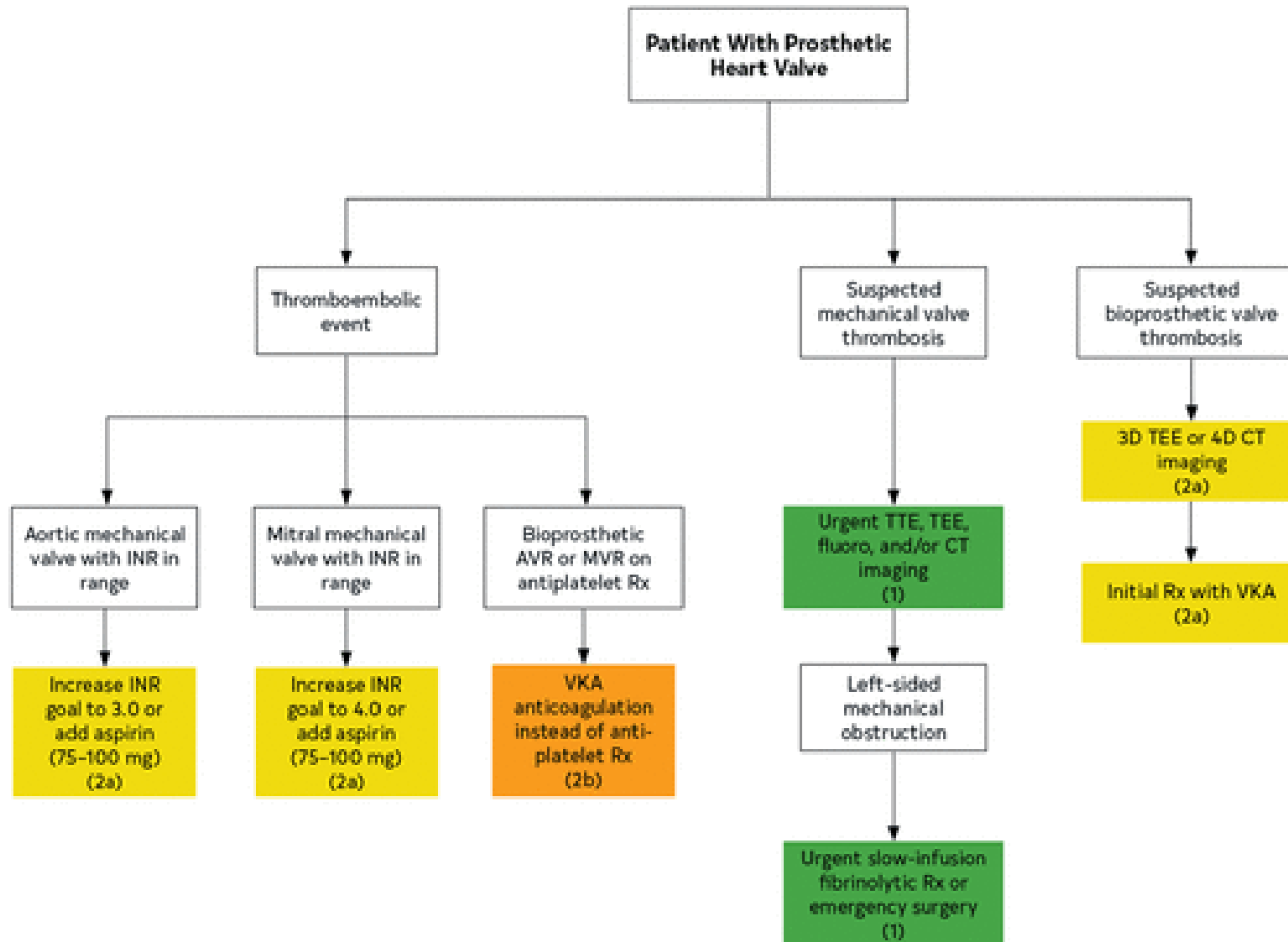
Anticoagulation using a VKA and/or UFH is recommended in bioprosthetic valve thrombosis before considering re-intervention.

I

Anticoagulation should be considered in patients with leaflet thickening and reduced leaflet motion leading to elevated gradients, at least until resolution.^{541,546}

IIa

Recommendations	Class
Mechanical prosthetic thrombosis	
Urgent or emergency valve replacement is recommended for obstructive thrombosis in critically ill patients without serious comorbidity. ⁵⁴²	I
Fibrinolysis (using recombinant tissue plasminogen activator 10 mg bolus + 90 mg in 90 min with UFH or streptokinase 1 500 000 U in 60 min without UFH) should be considered when surgery is not available or is very high risk, or for thrombosis of right-sided prostheses. ⁵⁴²	IIa
Surgery should be considered for large (>10 mm) non-obstructive prosthetic thrombus complicated by embolism.	IIa

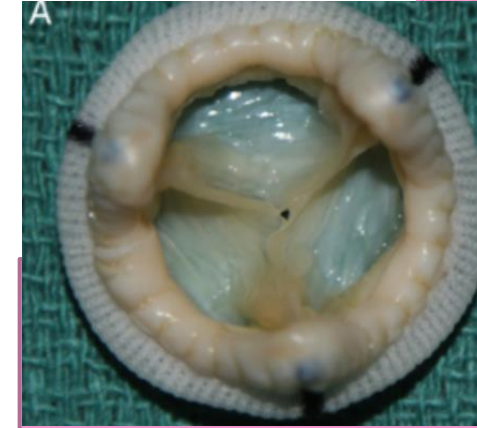


AHA

MHV

► Obstructive:
Fibrynolysis or surgery

► +thromboemboli
Increase INR+ASA



BHV

Warfarin(2a)

MHV & Surgery





1

C-EO

1. For patients with mechanical heart valves who are undergoing minor procedures (eg, dental extractions or cataract removal) where bleeding is easily controlled, continuation of VKA anticoagulation with a therapeutic INR is recommended.

management of antithrombotic therapy in the perioperative periods

It is recommended that VKAs are timely discontinued prior to elective surgery to aim for an INR <1.5.^c

I

Bridging of OAC, when interruption is needed, is recommended in patients with any of the following indications:

- Mechanical prosthetic heart valve.
- AF with significant mitral stenosis.
- AF with a CHA₂DS₂-VASc score ≥3 for women or 2 for men.^d
- Acute thrombotic event within the previous 4 weeks.
- High acute thromboembolic risk.^e

I

Therapeutic doses of either UFH or subcutaneous LMWH are recommended for bridging.^{476,504}

I

management of antithrombotic therapy in the postoperative periods

In patients who have undergone valve surgery with an indication for postoperative therapeutic bridging, it is recommended to start either UFH or LMWH 12–24 h after surgery.

I

In patients undergoing surgery, it is recommended that aspirin therapy, if indicated, is maintained during the periprocedural period.

I

Esc: bridging with UFH & LWMH (I)

AHA

- i. AVR + Risk factor; MVR: bridging with UFH & LWMH (I)
- ii. AVR - Risk factor: temporary discontinuation of VKA until subtherapeutic INR(I)

MHV & Emergent surgery



2a

C-LD

3. For patients with a mechanical valve prosthesis receiving VKA therapy who require immediate/emergency noncardiac surgery or an invasive procedure, administration of 4-factor prothrombin complex concentrate (or its activated form) is reasonable.

Warfarin toxicity

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Baseline CT
INR 3.6
Total hematoma volume 15.3 mL



Follow-up CT (19 hours)
INR 1.2
Total hematoma volume 67.6 mL

In case of major and/or life-threatening bleeding

1:discontinue VKA

2. 10 mg vitamin K should be administrated by slow i.v. infusion and repeated every 12 h if needed.

3.Until the anticoagulation effect is reversed, administration of prothrombin complex concentration (PCC) and/or (FFP) therapy should be initiated according to body weight
The efficacy should be monitored by re-check of INR at 30 min and every 4–6 h until normalization.

4.The optimal time to restart anticoagulation should be discussed in relation to location of the bleeding event and interventions performed to stop bleeding and/or to treat an underlying cause.

.In asymptomatic patients

with INR >10

- the VKA must be stopped
- and oral vitamin K (2.5–5 mg) prescribed
- while the INR must be monitored on a daily base for 2 weeks.
-

INR : 4.5 -10

- no difference in bleeding events with vitamin K vs. placebo
- warfarin should be stopped temporarily
- a small dose of oral vitamin K (1–2 mg) can be considered on an individual basis balancing between the risks.
-

Recommendations for Management of Excessive Anticoagulation and Serious Bleeding in Patients With Prosthetic Valves

Referenced studies that support the recommendations are summarized in [Online Data Supplement 37](#).

COR	LOE	Recommendations
2a	C-LD	1. For patients with mechanical valves and uncontrollable bleeding who require immediate reversal of anticoagulation, administration of 4-factor prothrombin complex (or its activated form) is reasonable.
2a	C-LD	2. For patients with mechanical valves and uncontrollable bleeding who have received 4-factor prothrombin concentrate complex, adjunctive use of intravenous vitamin K is reasonable if resumption of VKA therapy is not anticipated for 7 days.
2a	B-NR	3. For patients with bioprosthetic valves or annuloplasty rings who are receiving a direct oral anticoagulant and who require immediate reversal of anticoagulation because of uncontrollable bleeding, treatment with idarucizumab (for dabigatran) or andexanet alfa (for anti-Xa agents) is reasonable. ¹⁻⁵
2b	C-LD	4. For patients with a mechanical prosthetic valve and supratherapeutic INR (>5.0) who are not actively bleeding, the benefit of individualized treatment with oral vitamin K, in addition to temporary withdrawal of the VKA, is uncertain.

Thank you
for your
attention

