QUEL RELAIS ANTICOAGULANT, POUR QUELLE INTERVENTION?

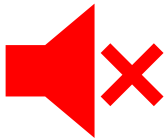
Cas des valves cardiaques (biologiques et mécaniques)

Gilles Montalescot

ACTION Study Group
CHU Pitié-Salpêtrière, Paris

Not the question

Native valvular heart disease
Atrial Fibrillation
Coronary artery disease
Urgent intervention
Bleeding on Anticoagulant



Valves et mortality chez les < 60 ans

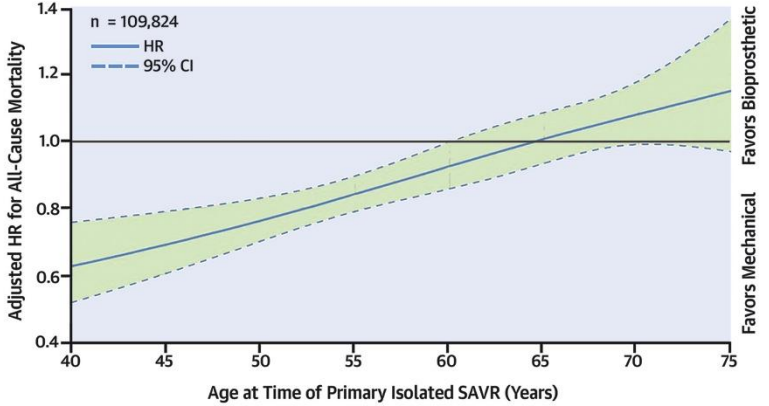
CENTRAL ILLUSTRATION: Relationship of Risk-Adjusted 10-Year All-Cause Mortality by Age and Prosthesis

Age-Dependent Mortality Risk:
Bioprosthetic vs Mechanical Valves in Patients Undergoing Isolated SAVR

Bioprosthetic

Mechanical

Adjusted for all STS ACSD predicted risk of operative mortality (PROM) model covariates using all cases with a continuous age variable and prosthesis type interaction term

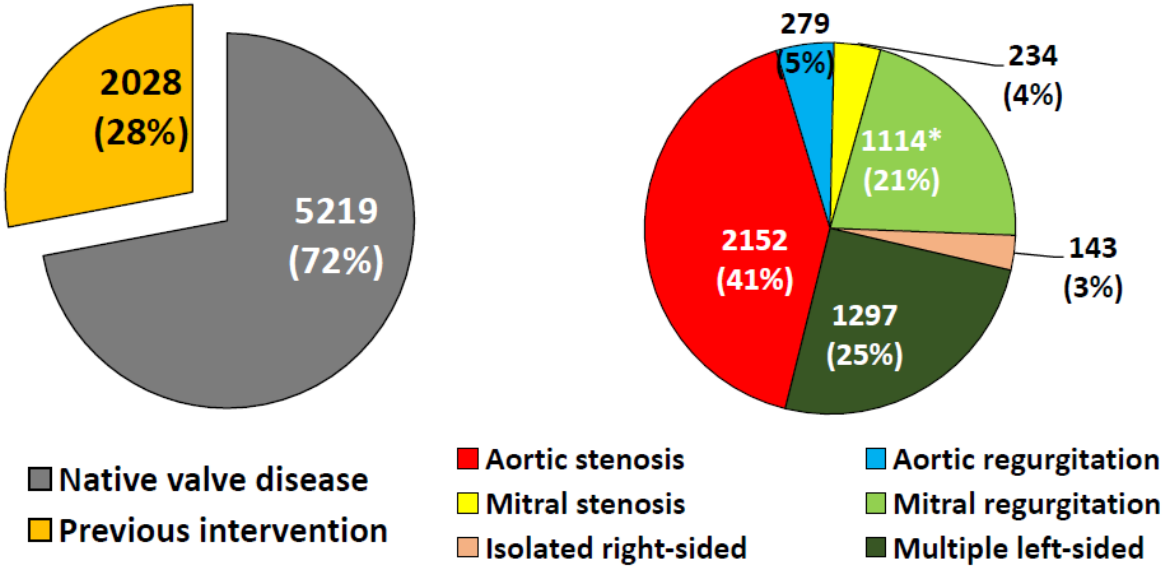


- 109,842 patients
  91,125 bioprosthetic AVR
  15,717 mechanical AVR
- **Longitudinal all-cause mortality favors mechanical valves in patients ≤60 years of age**
- STS Adult Cardiac Surgery Database linked to United States National Death Index

Bowdish ME, et al. JACC. 2025;85(12):1289-1298.

Are we clear on the frequency of the problem?

¼ patients taking anticoagulant therapy will require a surgical or invasive procedure within 2 years



EORP VH2 Registry

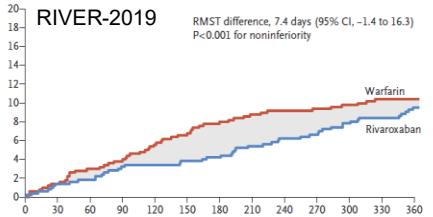
Iung et al. Circulation 2019;140:1156–69

Beyer-Westendorf et al, EHJ 2014, 10.1093/eurheartj/ehu034

Are we clear on which anticoagulant for which valve?

BIOLOGICAL

OAC is recommended for patients undergoing implantation of a surgical BHV who have other indications for anticoagulation.*	I	C
NOACs should be considered over VKA after 3 months following surgical implantation of a BHV in patients with AF.	IIa	B



MECHANICAL

OAC using a VKA is recommended lifelong for all patients with an MHV prosthesis.	I	B

ESC Guidelines VHD 2021, Vahanian et al

Are we clear on the TE risk of the patients?

Low TE risk:

- *BHV*
- *Aortic MHV in sinus rhythm*

… and no other TE risk: low EF, previous TE event, hypercoagulable state, high CHADvasc

High TE risk:

- *All the others*

Are we clear on the bleeding risk factors of the patients?

None

- Prior bleeding event (any)
- Age (>80)
- Hypertension (uncontrolled)
- Thrombocytopenia (100,000)
- Anemia (11gr)
- Cancer (<3 years)
- Recent stroke (<1year)
- Other drugs (antiplatelets, NSAIDS, corticosteroids)

Are we clear on the bleeding risk of the interventions?

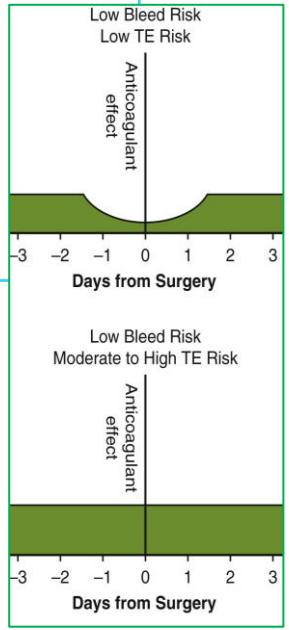
Surgery with minor bleeding risk	Surgery with low bleeding risk (infrequent or with low clinical impact)	Surgery with high bleeding risk (frequent or with significant clinical impact)
• Cataract or glaucoma procedure • Dental procedures: extractions (1–3 teeth), periodontal surgery, implant positioning, endodontic (root canal) procedures, subgingival scaling/cleaning • Endoscopy without biopsy or resection • Superficial surgery (e.g. abscess incision, small skin excisions/ biopsy) • PCI • Endoscopy with biopsies using paediatric or standard forceps are acceptable	• Abdominal surgery: cholecystectomy, hernia repair, colon resection • Breast surgery • Complex dental procedures (multiple tooth extractions) • Endoscopy with simple biopsy • Gastroscopy or colonoscopy with simple biopsy • Large-bore needles procedures (e.g. bone marrow or lymph node biopsy) • Non-cataract ophthalmic surgery • Small orthopaedic surgery (foot, hand arthroscopy) • Gingival graft, pre-implant surgery • Endoscopy with hemostatic proced ures or gastric varices treatment • Colonoscopy with possible polypec tomy	• Abdominal surgery with liver biopsy, extracorporeal shockwave lithotripsy • Extensive cancer surgery (e.g. pancreas, liver) • Neuraxial (spinal or epidural) anaesthesia • Neurosurgery (intracranial, spinal) • Major orthopaedic surgery • Procedures with vascular organ biopsy (kidney or prostate) • Reconstructive plastic surgery • Specific interventions (colon polypectomy, lumbar puncture, endovascular aneurysm repair) • Thoracic surgery, lung resection surgery • Urological surgery (prostatectomy, bladder tumour resection) • Vascular surgery (e.g. AAA repair, vascular bypass)

ESC Guidelines NCS 2022, Halvorsen et al

Are we clear on TE *vs*. Bleeding risk?

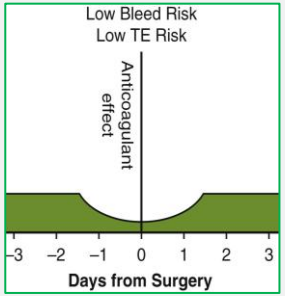
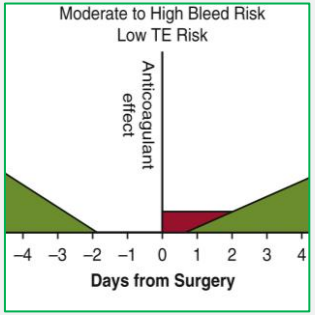
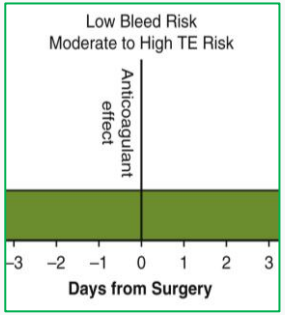
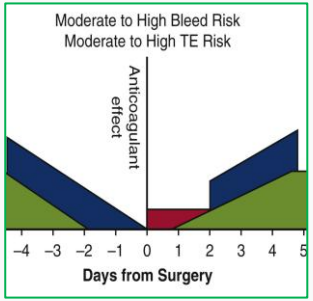
1. *Annual* TE risk of MHV without anticoagulation is 8-22%
2. VKA reduces TE risk by 80%
3. *Peri-operative* TE risk of MHV is < 1.2% (with or without bridging)
4. Bleeding/thrombosis ratio is 13:1 with bridging vs. 5:1 without bridging

➔ we overestimate the TE risk and underestimate the Bleeding risk
➔ avoid bridging as much as possible
➔ do not stop anticoagulation when unnecessary
➔ lower anticoagulation whenever possible



CT Tan et al. J Thorac Cardiovasc Surg 2019;158:200-3

So, let's be clear clear on management !

PATIENT	SURGERY: Low bleeding Minor surgery + no B risk factor	SURGERY: High Bleeding Major surgery *or* B risk factor
Low TE BHV, aortic MHV in SR, no TE risk factor	 No anticoagulation interruption Check INR (<4) with VKA Intervention at trough levels with NOACs	 Anticoagulation interruption VKA stopped 4 days before (INT<1.5) NOACs stopped 48hours before (creat cl) No LMWH bridging DVT prevention after I° as necessary
High TE All the other HV	 No anticoagulation interruption Check INR (<4) with VKA Intervention at steady state with NOACs	 Anticoagulation interruption VKA stopped 4 days before (INT<1.5) NOACs stopped > 48hours (creat cl) LMWH bridging (UFH if renal failure) before DVT prevention after I° as necessary LMWH bridging (UFH if renal failure) after Resume anticoagulant same dose

Bridging Mechanical & Pharmacological VTE Prophylaxis Coumadin

Guidelines clearer?

Continuation of medication		
In minor bleeding risk surgery and other procedures where bleeding can be easily controlled, it is recommended to perform surgery without interruption of OAC therapy.[240,296–299]	I	B
LMWH is recommended, as an alternative to UFH, for bridging in patients with MHVs and high surgical risk.[295]	I	B
In patients using NOACs, it is recommended that minor bleeding risk procedures are performed at trough levels (typically 12–24 h after last intake).	I	C
For patients with mechanical prosthetic heart valves undergoing NCS, bridging with UFH or LMWH should be considered if OAC interruption is needed and patients have: (i) mechanical AVR and any thromboembolic risk factor; (ii) old-generation mechanical AVR; or (iii) mechanical mitral or tricuspid valve replacement.	IIa	C
Bridging of OAC therapy is not recommended in patients with low/moderate thrombotic risk undergoing NCS.[290,292,293,306–308,311]	III	B
Start/resumption of medication		
If bleeding risk with resumption of full-dose anticoagulation outweighs the risk of thromboembolic events, postponing therapeutic anticoagulation 48–72 h after the procedure may be considered, using post-operative thromboprophylaxis until resumption of full OAC dose is deemed safe.	IIb	C

2022

ESC Guidelines NCS 2022, Halvorsen et al

Recommendations for management of antithrombotic therapy after prosthetic valve implantation or valve repair in the perioperative and postoperative periods

Recommendations	Class[a]	Level[b]
Management of antithrombotic therapy in the perioperative period		
It is recommended that VKAs are timely discontinued prior to elective surgery to aim for an INR <1.5.[c]	I	C
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 CHA_2DS_2-VASc score ≥3 for women or 2 for men.[d] • Acute thrombotic event within the previous 4 weeks. • High acute thromboembolic risk.[e]	I	C
Therapeutic doses of either UFH or subcutaneous LMWH are recommended for bridging.[476,504]	I	B
In patients with MHVs, it is recommended to (re)-initiate the VKA on the first postoperative day.	I	C

Continued

ESC Guidelines VHD 2021, Vahanian et al

Recommendations for Bridging Therapy During Interruption of Oral Anticoagulation in Patients With Prosthetic Heart Valves

COR	LOE	Recommendations
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.
1	C-LD	2. For patients with a bileaflet mechanical AVR and no other risk factors for thromboembolism who are undergoing invasive procedures, temporary interruption of VKA anticoagulation, without bridging agents while the INR is subtherapeutic, is recommended.
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.
2a	C-LD	4. For patients with bioprosthetic heart valves or annuloplasty rings who are receiving anticoagulation for AF, it is reasonable to consider the need for bridging anticoagulant therapy around the time of invasive procedures on the basis of the CHA_2DS_2-VASc score weighed against the risk of bleeding.
2a	C-LD	5. For patients who are undergoing invasive procedures and have 1) a mechanical AVR and any thromboembolic risk factor, 2) an older-generation mechanical AVR, or 3) a mechanical mitral valve replacement, bridging anticoagulation therapy during the preoperative time interval when the INR is subtherapeutic is reasonable on an individualized basis, with the risks of bleeding weighed against the benefits of thromboembolism prevention.

ACC AHA Guidelines VHD Otto et al 2020


merci
thank you
danke
gracias
obrigado
go raibh maith agat
спасибо
grazie
bedankt
arigatô
ngiyabonga
sukriya
dakujem
mochchakkeram
ederim
teşekkür
hvala
barka
tau
kia ora
ありがとう
grazzi
мерси
mersi
diolch
dhanyavad
shukriya
spas
teşekkü ederim
gracies
welalin
enkosi
terima kasih
gratias ago
misaotra
matondo
dhanyavadagalu
dank je
chnorakaloutioun
dekuji
bayarlaa
tanemirt
djere dieuf
rahmet
akun
aciû
tack
sulpay
kop khun
najis tuke
mamnun
paldies
faafetai lava
kam sah hamnida
nanni
taiku
asante
trugarez
kiitos
ευχαριστώ
Баярлалаа
vinaka
dankie
Xiexie
sobodi
dankon
manana
kop khun krap
rahmet
didi madloba
mahalo
merce
leat
nandri
kaszonom
хвала
blagodaram
krap
graçie
mèsi
tapadh
takk
sagolun
chokrane
謝謝
dziękuję
tenki
murakoze