

# La terapia antitrombotica post-TAVI

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## HOT TOPICS IN CARDIOLOGIA 2023

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Napoli



## **Marco Zimarino, MD, PhD**

- ▶ No conflicts of interest to disclose
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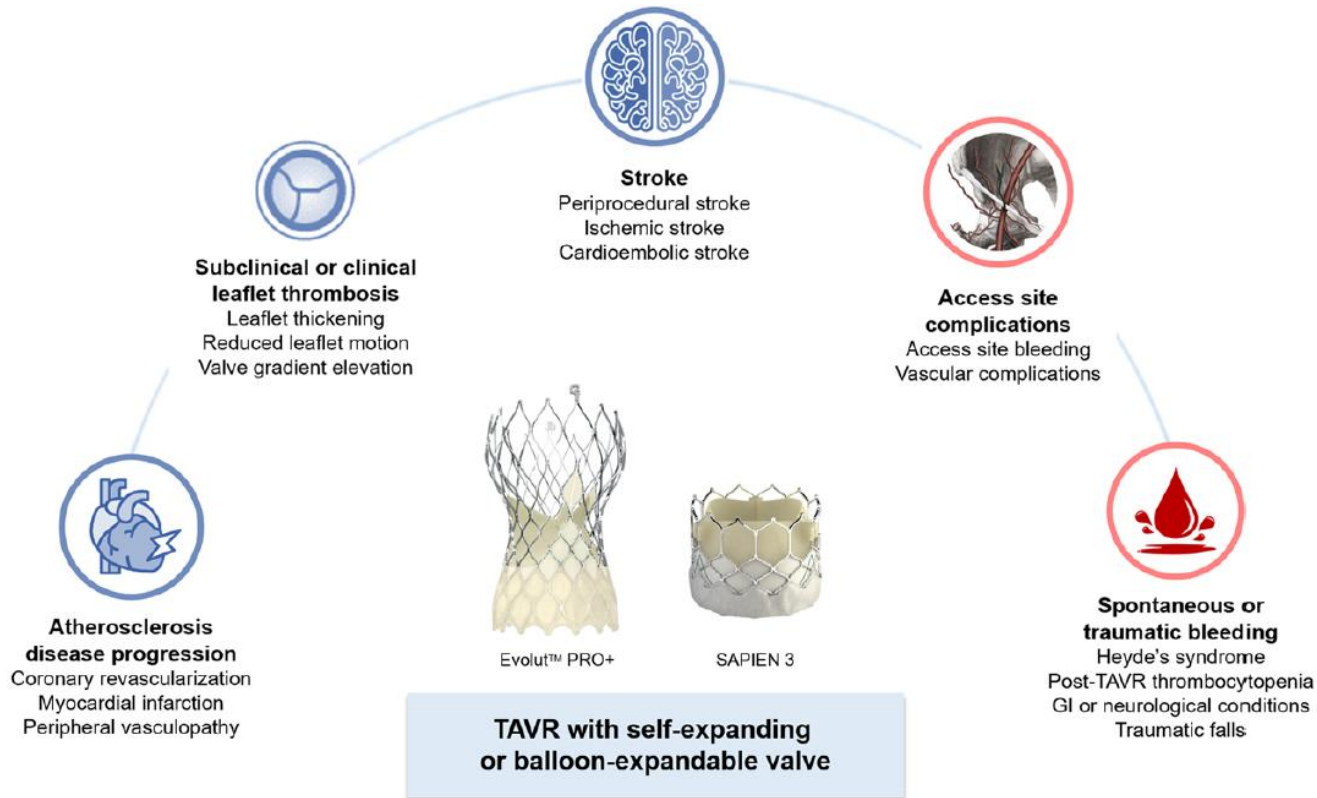


- ▶ Risk assessment
- ▶ Early (periprocedural up to 30 days) management
- ▶ Long-term outcomes
  - ▶ Patients w/out indication to OAC
  - ▶ Patients with indication to OAC

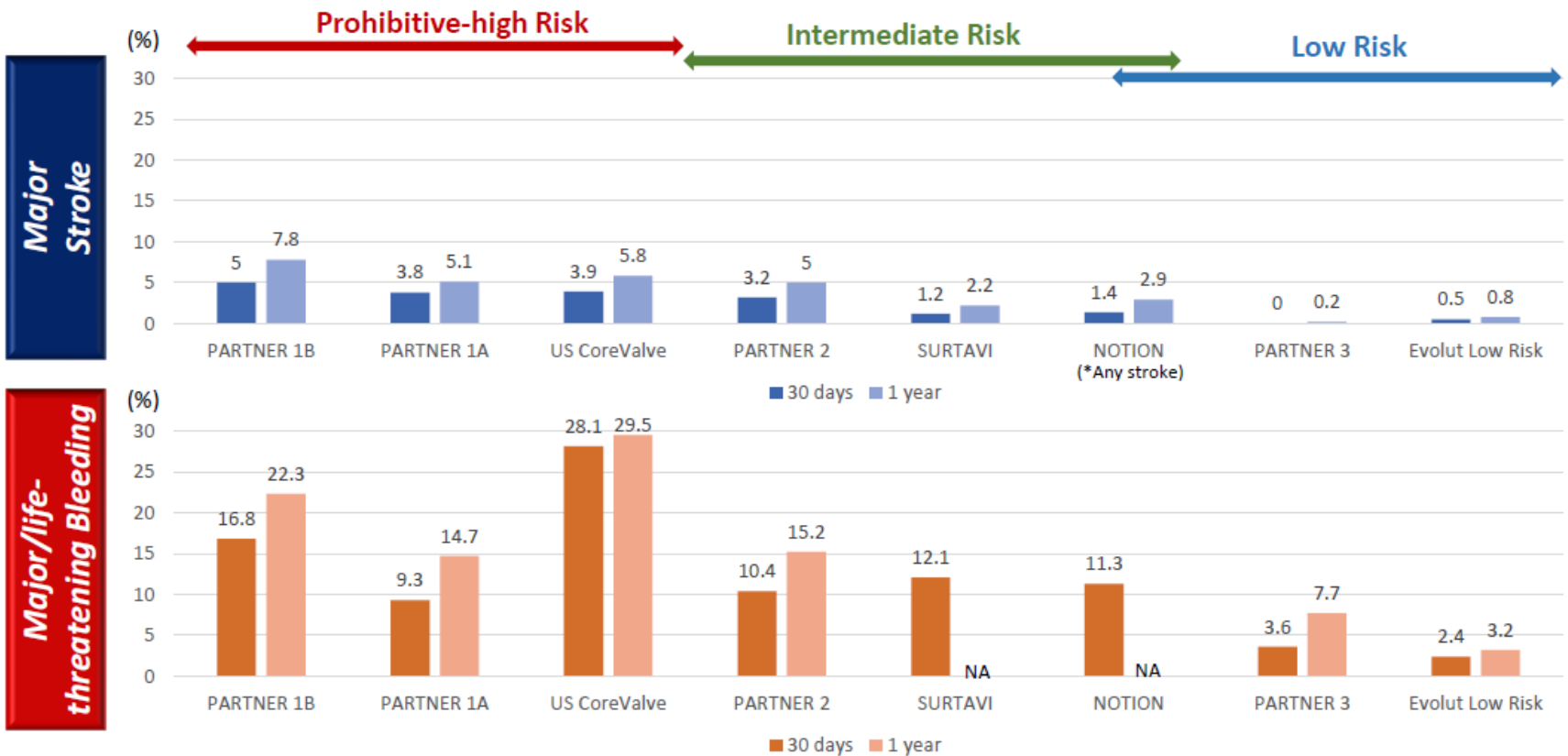
# Determinants of Thrombotic, Ischemic and Bleeding Risk in patients undergoing TAVI

|                                | Thrombotic/Ischemic Risk   | Bleeding Risk   |
|--------------------------------|--|---|
| <b>Patient Characteristics</b> | <ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> <li>• History of thrombotic events</li> </ul>   | <ul style="list-style-type: none"> <li>• Age</li> <li>• Sex</li> <li>• History of bleeding events</li> </ul>  |
| <b>Comorbidities</b>           | <ul style="list-style-type: none"> <li>• Peripheral vasculopathy</li> <li>• Atrial fibrillation</li> <li>• Cardiovascular risk factors</li> </ul>  | <ul style="list-style-type: none"> <li>• Peripheral vasculopathy</li> <li>• Chronic kidney disease</li> </ul>   |
| <b>Co-medications</b>          | <ul style="list-style-type: none"> <li>• Suboptimal antithrombotic therapy and withdrawal of protection</li> </ul>   | <ul style="list-style-type: none"> <li>• Antiplatelet therapy</li> <li>• Anticoagulant therapy</li> </ul>   |
| <b>Procedural Aspects</b>      | <ul style="list-style-type: none"> <li>• Rapid ventricular pacing</li> <li>• Thrombi or plaque dislodgement</li> <li>• Lack of embolic protection device</li> <li>• Prior TAVR or small bioprosthesis</li> <li>• Coronary obstruction</li> </ul> | <ul style="list-style-type: none"> <li>• Acquired vWF deficiency</li> <li>• Acquired thrombocytopenia</li> <li>• Access-site complications</li> <li>• Injury to cardiac structures</li> </ul> |

# Thrombotic and bleeding risk assessment in patients undergoing TAVI

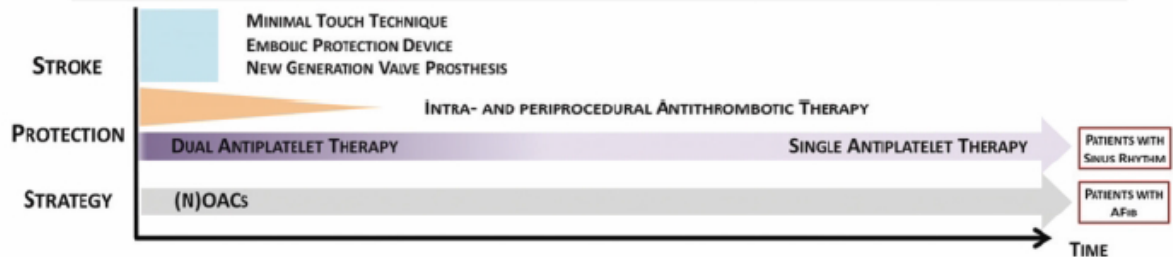
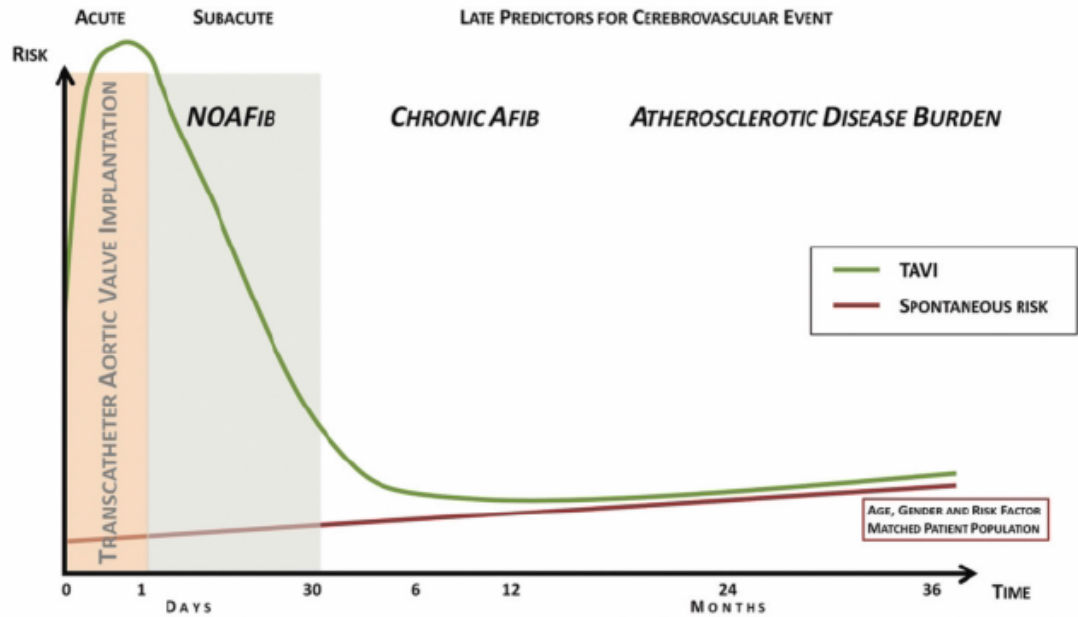


# Thrombotic and bleeding risk in RCTs



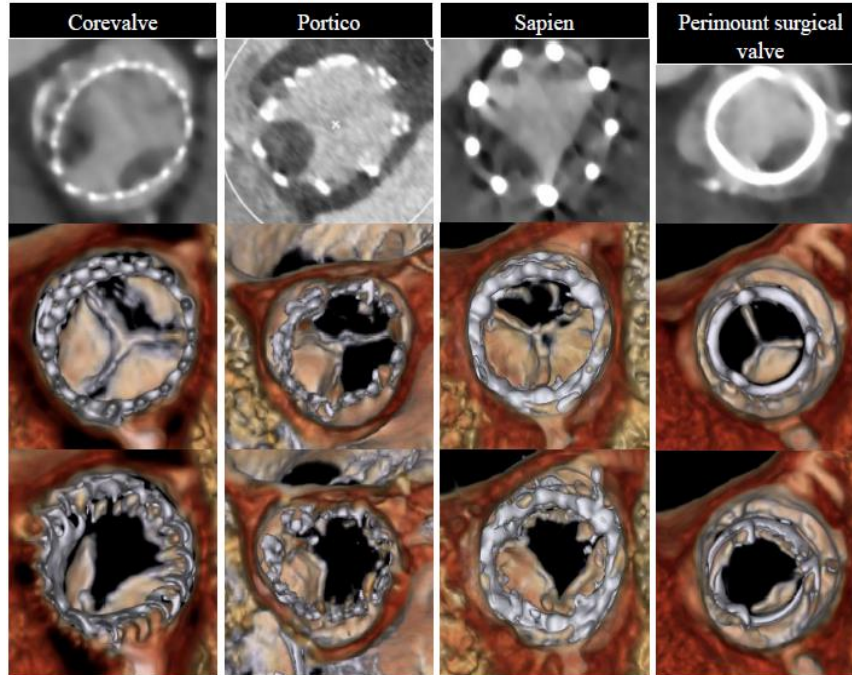
# TAVI AND CEREBROVASCULAR EVENTS

Stortecky and Windecker  
*Circulation* 2012; 126:2921-4





# Subclinical Leaflet Thrombosis in Bioprosthetic Aortic Valves



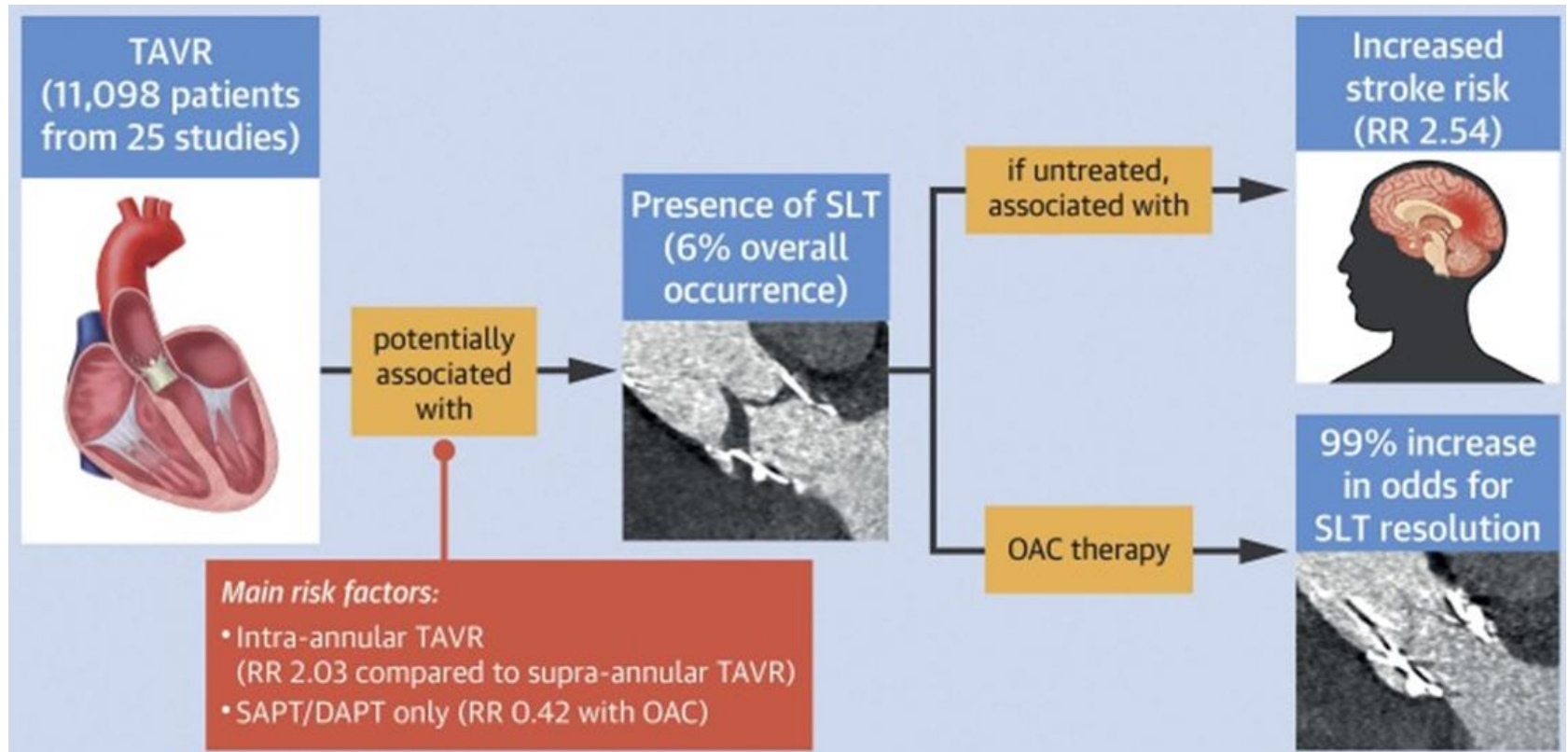
Diastolic

Systolic

|  | Normal leaflet motion | Reduced leaflet motion | p value |
|--|-----------------------|------------------------|---------|
| <b>Anticoagulation vs no anticoagulation</b>       | n=784                 | n=106                  | <0.0001 |
| Anticoagulation                                    | 216 (28%)             | 8 (8%)                 | ..      |
| No anticoagulation                                 | 568 (72%)             | 98 (92%)               | ..      |
| <b>Anticoagulation vs DAPT</b>                     | n=393                 | n=39                   | <0.0001 |
| Anticoagulation                                    | 216 (55%)             | 8 (21%)                | ..      |
| DAPT   | 177 (45%)             | 31 (79%)               | ..      |
| <b>Anticoagulation vs monoantiplatelet therapy</b> | n=558                 | n=71                   | <0.0001 |
| Anticoagulation                                    | 216 (39%)             | 8 (11%)                | ..      |
| Monoantiplatelet therapy                           | 342 (61%)             | 63 (89%)               | ..      |
| <b>Aspirin vs ADP antagonists</b>                  | n=342                 | n=63                   | 0.85    |
| Aspirin  | 312 (91%)             | 57 (90%)               | ..      |
| ADP antagonists                                    | 30 (9%)               | 6 (10%)                | ..      |
| <b>Warfarin vs no anticoagulation</b>              | n=680                 | n=103                  | 0.001   |
| Warfarin   | 112 (16%)             | 5 (5%)                 | ..      |
| No anticoagulation                                 | 568 (84%)             | 98 (95%)               | ..      |
| <b>NOACs vs no anticoagulation</b>                 | n=672                 | n=101                  | 0.0002  |
| NOACs  | 104 (15%)             | 3 (3%)                 | ..      |
| No anticoagulation                                 | 568 (85%)             | 98 (97%)               | ..      |
| <b>Monoantiplatelet vs DAPT</b>                    | n=519                 | n=94                   | 0.83    |
| Monoantiplatelet therapy                           | 342 (66%)             | 63 (67%)               | ..      |
| DAPT   | 177 (34%)             | 31 (33%)               | ..      |



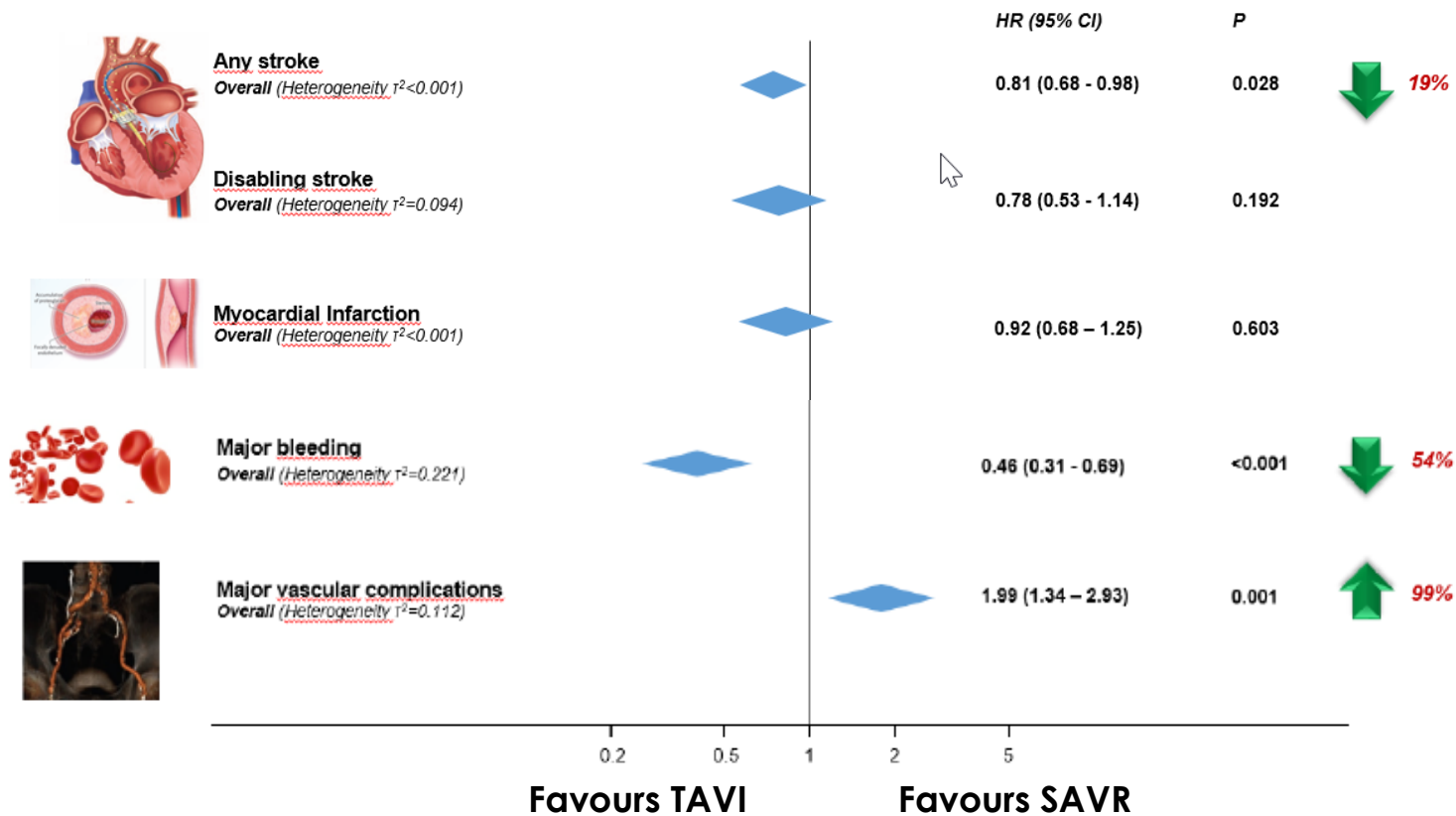
# Subclinical Leaflet Thrombosis after TAVI



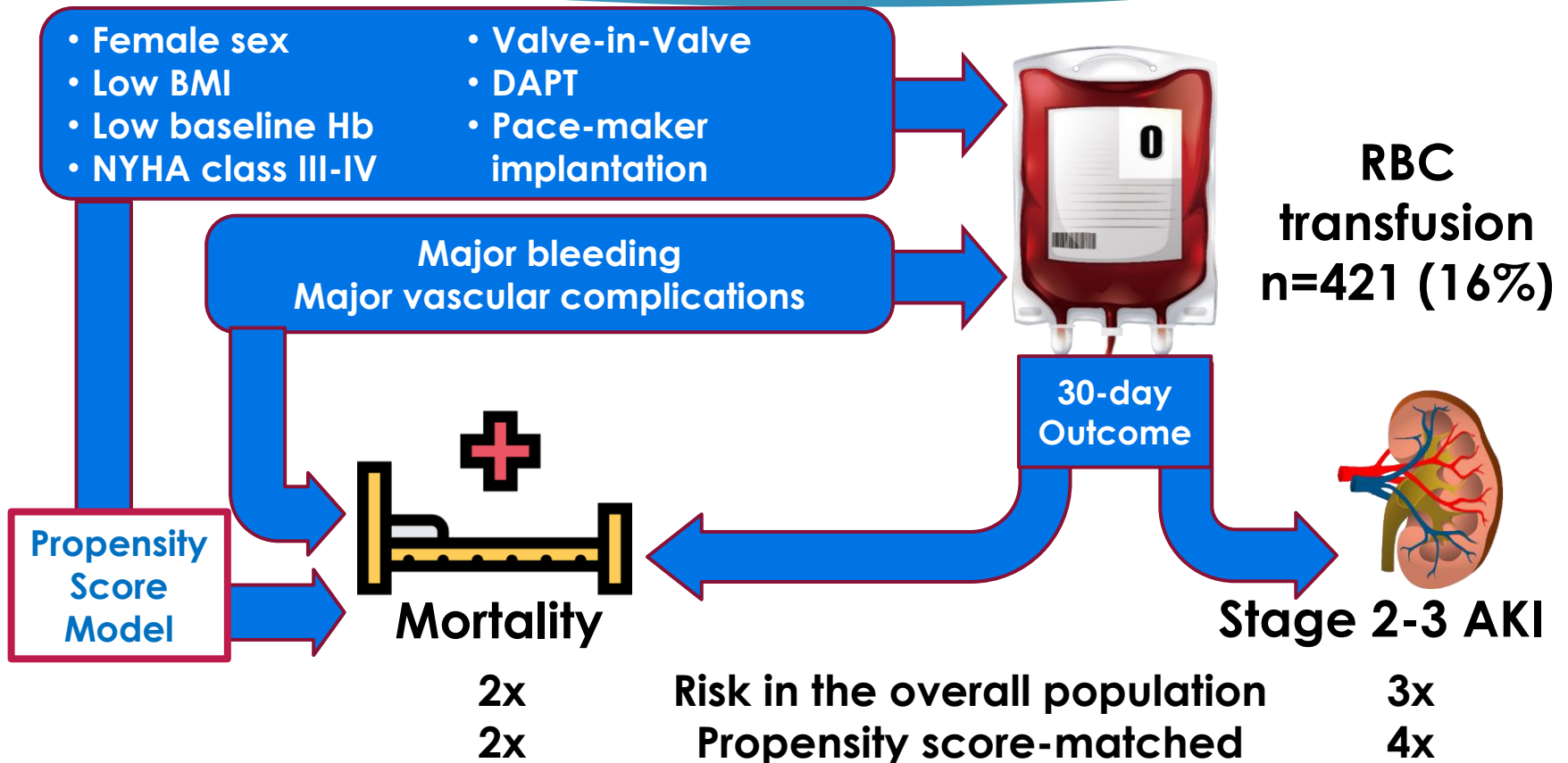


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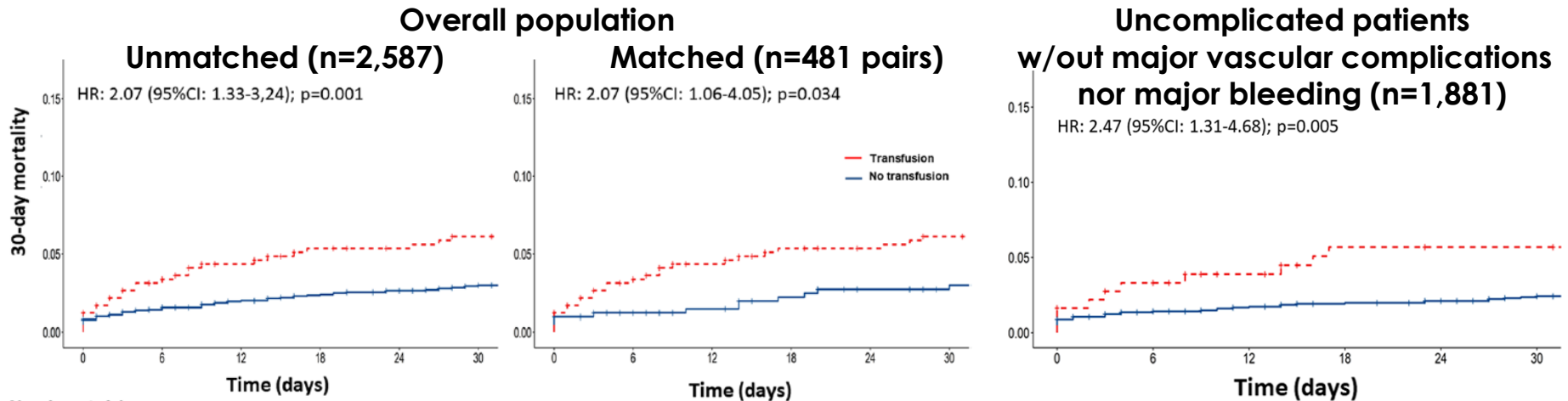
# Thrombotic and bleeding risks in TAVI vs SAVR



# The «setup» of RBC transfusion



# Let's refrain from «cosmetic» RBC transfusion



**Multivariable Cox Proportional-Hazards regression Independent Risk Factors for 30-day MACE (mortality, MI, stroke and 2-3 AKI)**

|                              | HR   | 95% CI    | P value |
|------------------------------|------|-----------|---------|
| Major vascular complications | 1.85 | 1.04–3.49 | 0.044   |
| Major bleeding               | 1.69 | 1.02–2.65 | 0.041   |
| Transfusion                  | 1.62 | 1.01–2.52 | 0.048   |

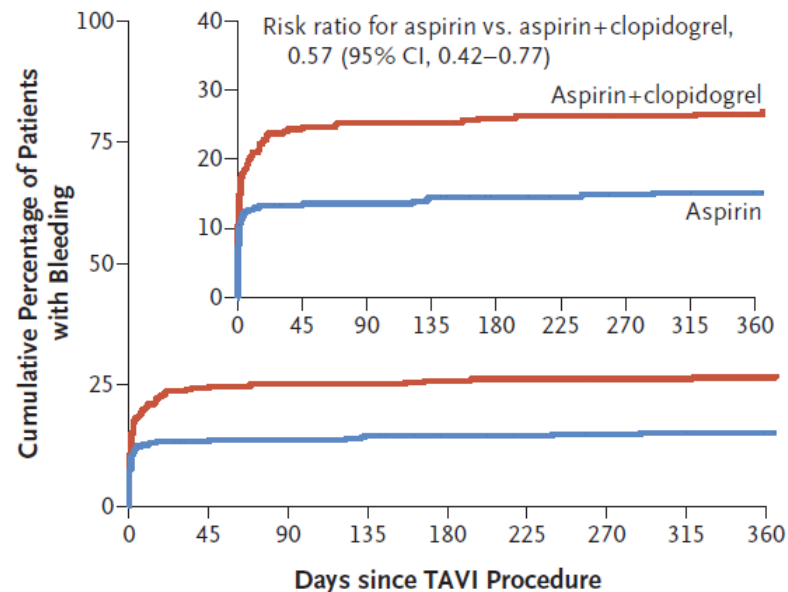
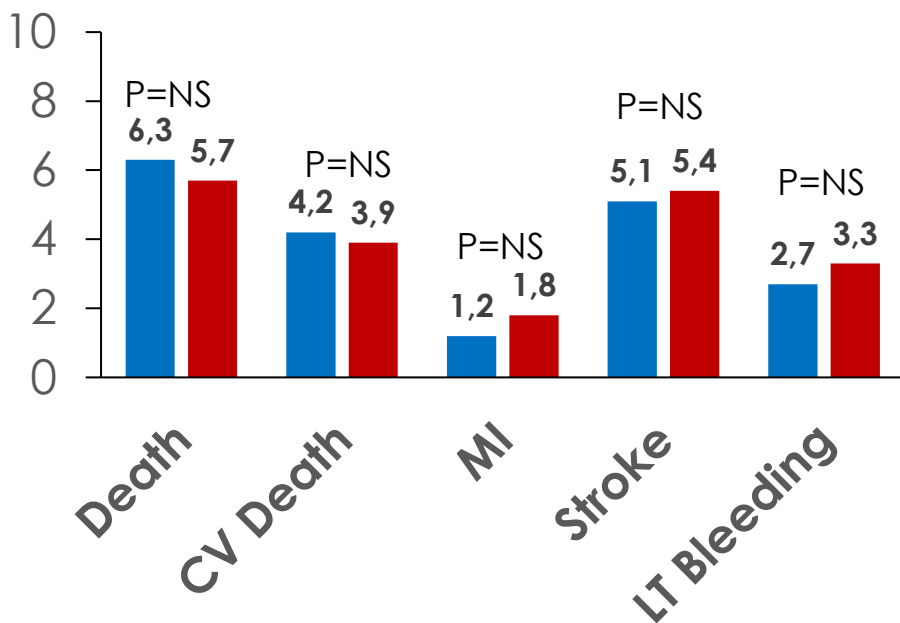


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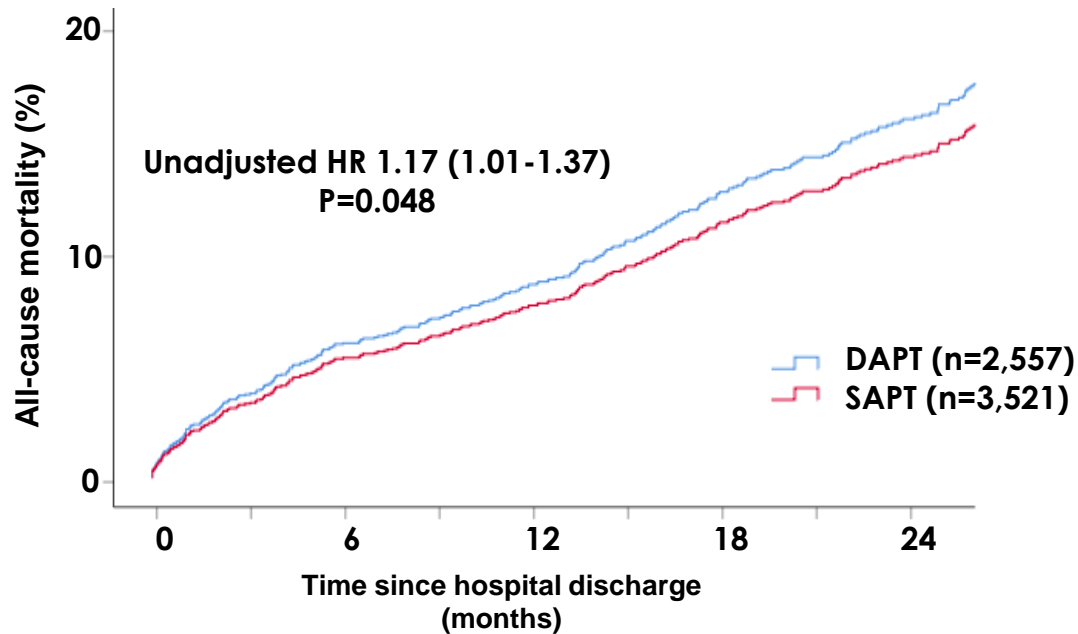
# SAPT vs DAPT after TAVI

■ Aspirin ■ Aspirin + Clopidogrel



| No. at Risk         | 0   | 45  | 90  | 135 | 180 | 225 | 270 | 315 | 360 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Aspirin+clopidogrel | 334 | 248 | 244 | 243 | 239 | 238 | 237 | 237 | 234 |
| Aspirin             | 331 | 280 | 279 | 276 | 271 | 269 | 267 | 266 | 264 |

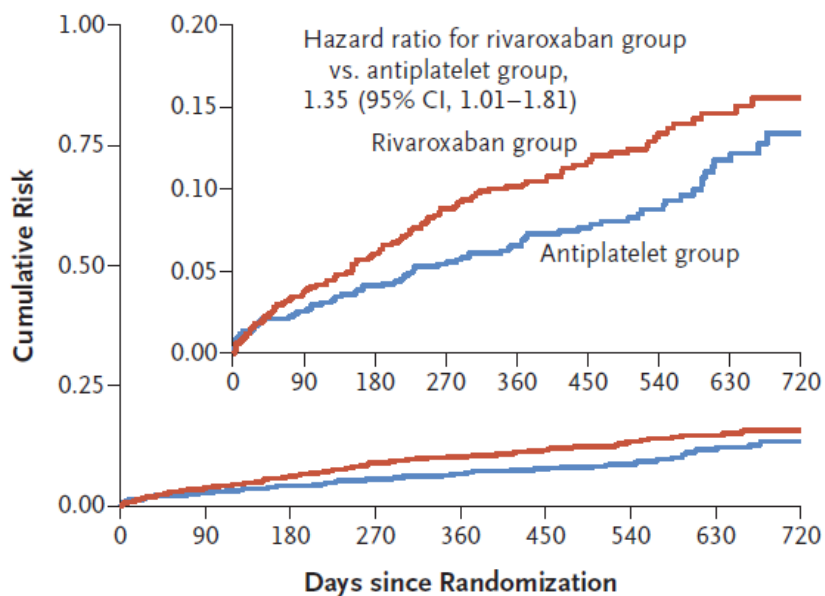
# Impact of antithrombotic therapy at discharge on long-term mortality



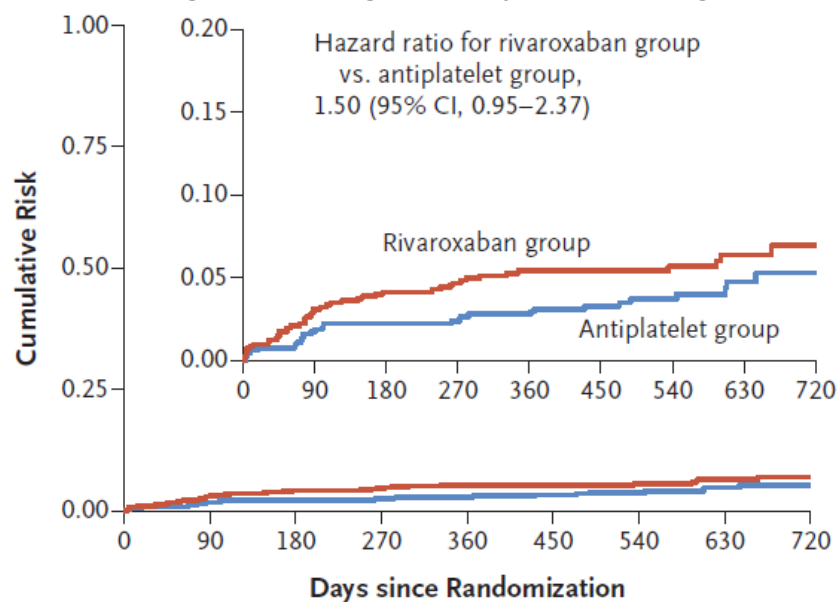
Data from the TRITAVI registry

# NOAC in patients w/out indication to OAC after TAVI

## Death or thromboembolic events



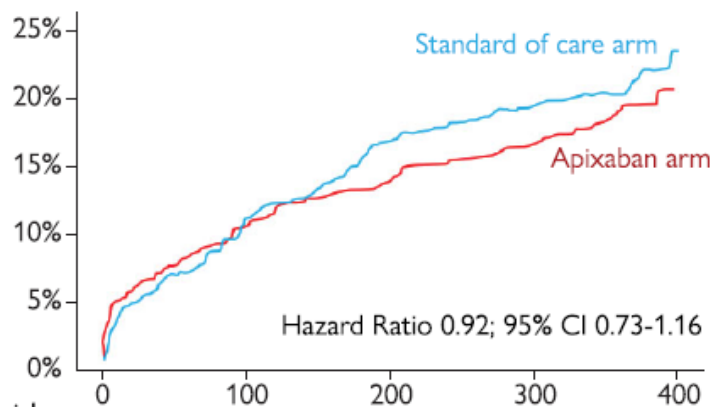
## Life-threatening, disabling, or major bleeding



# NOAC in patients regardless indication to OAC after TAVI

## Primary endpoint (Intent-to-treat)

Time to death, stroke, MI, systemic embolism, intracardiac or valve thrombosis, VT/PE, major bleedings



No at risk

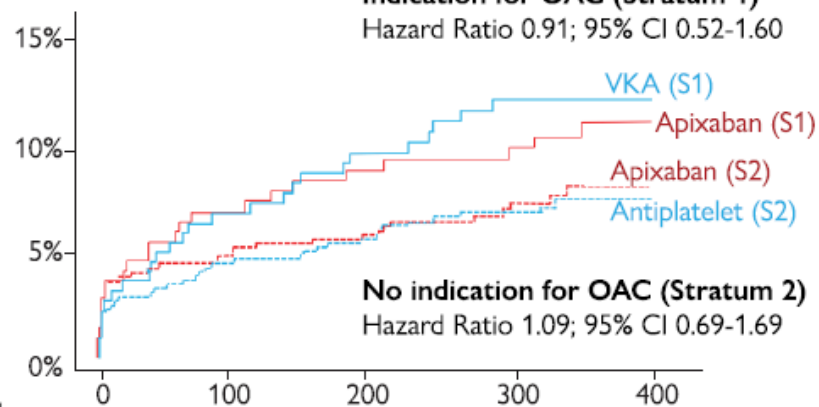
|          |     |     |     |     |    |
|----------|-----|-----|-----|-----|----|
| SOC      | 751 | 646 | 583 | 555 | 42 |
| Apixaban | 749 | 645 | 612 | 585 | 27 |

## Safety analysis

(Primary safety : BARC 4, 3a, 3b and 3c)

### Indication for OAC (Stratum 1)

Hazard Ratio 0.91; 95% CI 0.52-1.60



No at risk

|                  |     |     |     |     |    |
|------------------|-----|-----|-----|-----|----|
| VKA (S1)         | 228 | 196 | 180 | 170 | 14 |
| Apixaban (S1)    | 223 | 188 | 177 | 167 | 10 |
| Antiplatelet(S2) | 526 | 479 | 459 | 441 | 18 |
| Apixaban (S2)    | 523 | 480 | 457 | 441 | 31 |

### No indication for OAC (Stratum 2)

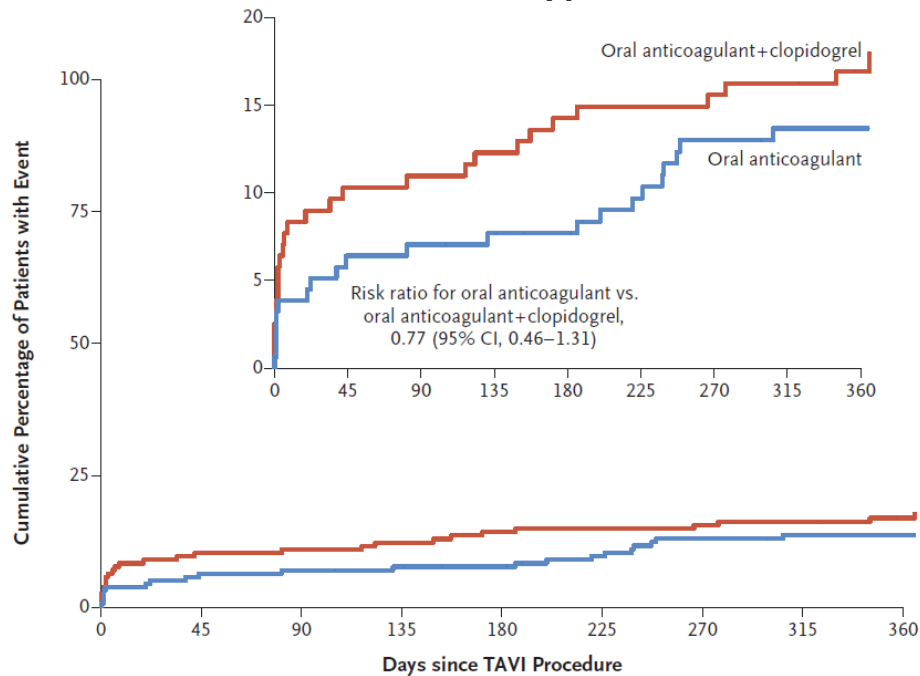
Hazard Ratio 1.09; 95% CI 0.69-1.69



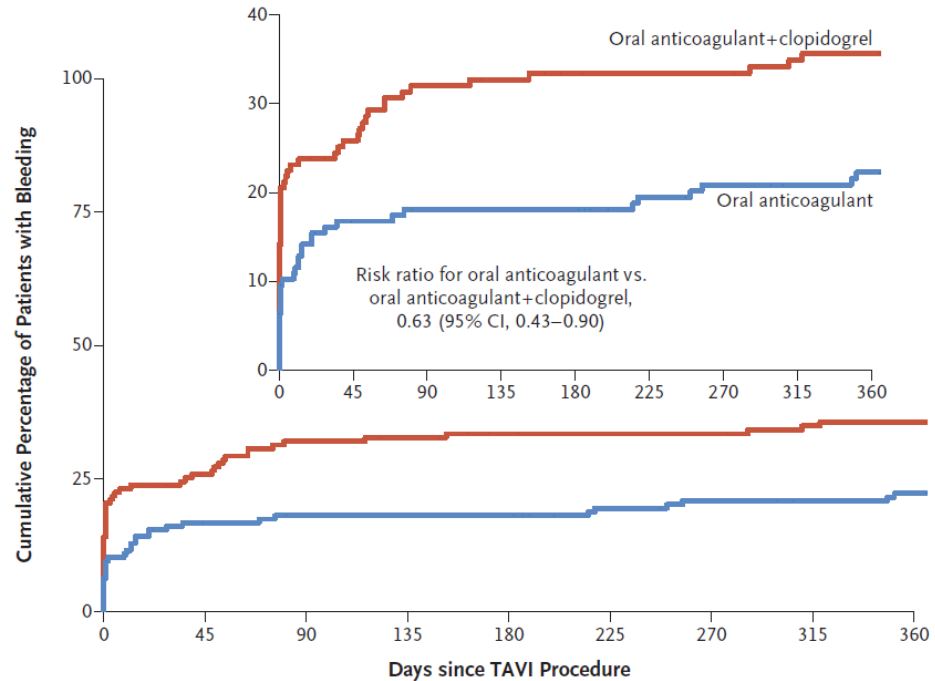
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# Anticoagulation with or without Clopidogrel after TAVI

## CV Death, Ischemic Stroke or type 2 MI

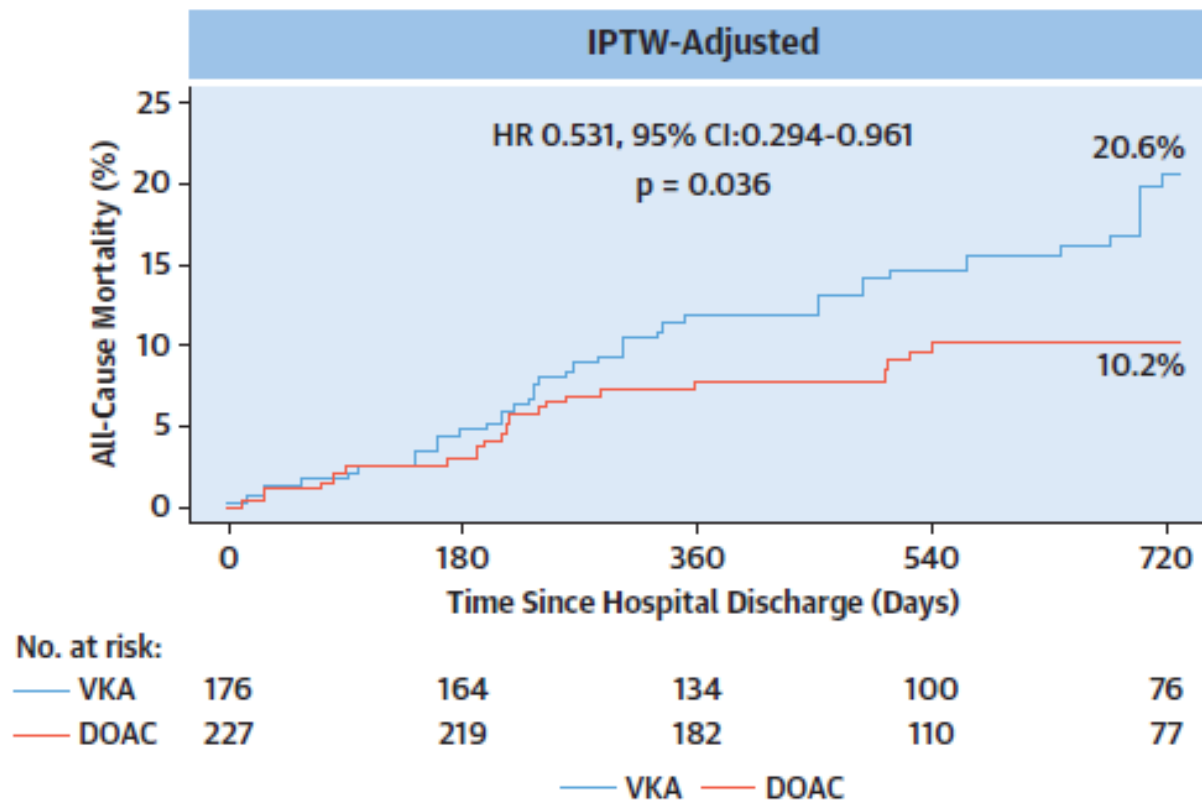


## Bleeding

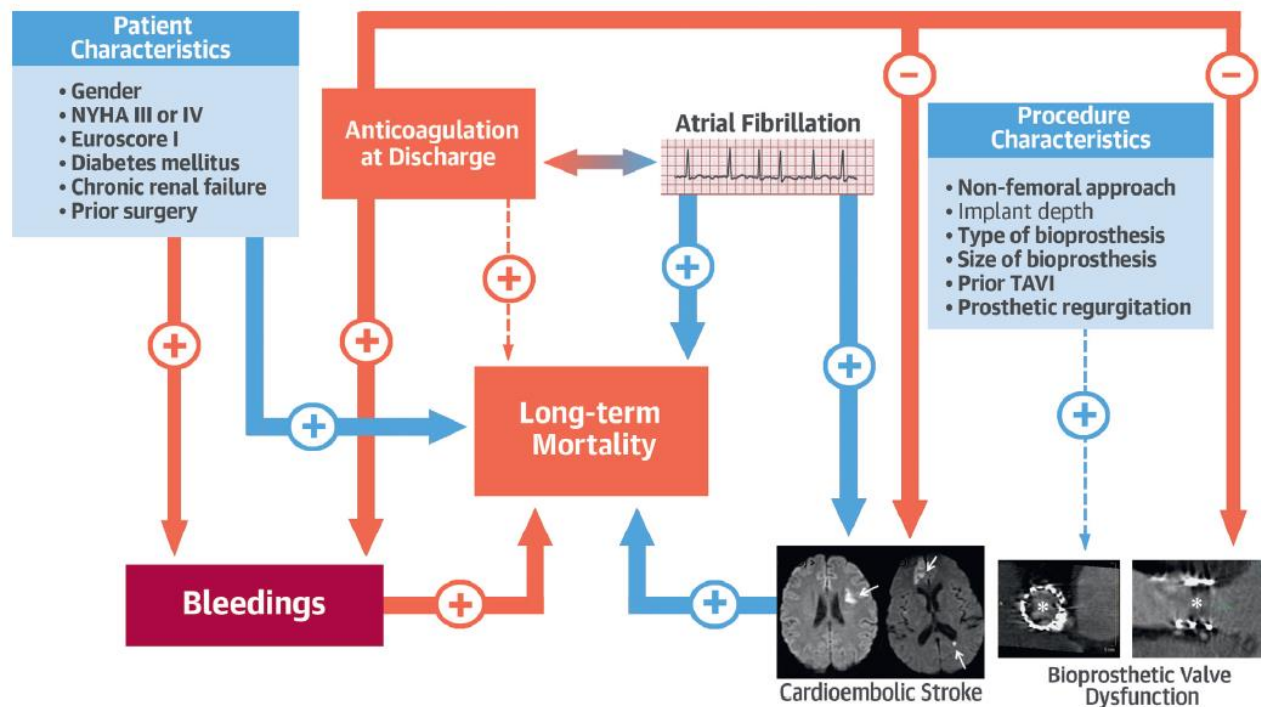




# Anticoagulant and all-cause mortality after TAVI



# The Complex Interplay of Long-term Mortality, Bleeding, Early Valve Dysfunction and Anticoagulation



# Conclusions

