

# How to prevent or manage Direct Oral Anticoagulant (DOAC)-induced bleeding complications? Guideline recommendations

Chair: Prof. Carolyn Weiniger

Monday 5<sup>th</sup> of June 2023

## 1. HOW TO MINIMISE BLEEDING COMPLICATIONS AFTER REGIONAL ANAESTHESIA

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### Why should we take into account if a patient receives anticoagulants before regional anesthesia?:

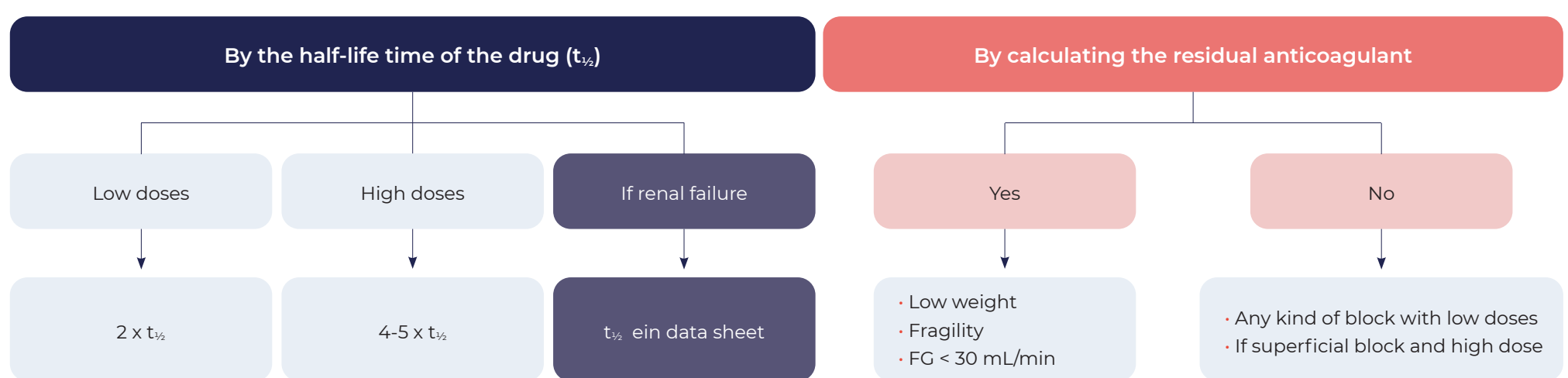
Because it increases the risk of hemorrhagic complications. Thus, in an epidural anesthesia, the risk for non-anticoagulated patients is 1:150,000; if they receive thromboprophylaxis, it is 1:18,000; if they receive aspirin and heparin, it is 1:8,500, and if they receive high doses of low-molecular weight heparin (LNWH), it goes up to 1:3,100.

### In case of a regional anesthesia, what should we take into account in an anticoagulated patient?:

- The type of blockade: deep/neuraxial vs. superficial.
- The type of drug used.
- The **dose graded as high or low** (the exact dose in mg is not important).
- The characteristics of the patient (age, renal failure, liver failure...)

### How can we prevent hemorrhagic complications in case of a regional anesthesia?

By adjusting periods without anticoagulation before and after the blockade or insertion and removal of the catheter and, if required, reversion of anticoagulation<sup>1</sup>.



	Warfarin	Dabigatran	Apixaban	Rivaroxaban	Edoxaban
Peak action (hours)	<4	2	3-4	2-4	1-2
t <sub>1/2</sub>	≈1 week	12-14 h	≈12	11-13	10-14
Renal excretion (%)	<1	85	27	≈33	50
Discontinue treatment in medium- and high-bleeding risk surgeries		3 days (FG>50 mL/min) 5 days (FG 30-50)	3 days (FG>30)	3 days (FG>30)	3 days (FG>30)

		-6	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	
Risk of surgical bleeding	Mild	Continue anticoagulation, but consider skipping a dose if FG<30 mL/min or HASBLED>5 points											
	Moderate	Dabigatran FG>50 mL/min					X	X		X	X		Restart
		Dabigatran FG>31-50mL/min		X	X	X	X			X	X		Restart
		Rivaroxaban/Apixaban FG>30 mL/min						X		X	X		Restart
		Rivaroxaban/Apixaban FG<30 mL/min					X	X		X	X		Restart
	High	Dabigatran FG>50 mL/min				X	X	X		X	X		Restart
		Dabigatran FG>31-50mL/min		X	X	X	X	X		X	X		Restart
		Rivaroxaban/Apixaban FG>30 mL/min					X	X		X	X		Restart
Rivaroxaban/Apixaban FG<30 mL/min					X	X	X		X	X		Restart	

### How should we proceed when reintroducing the drug after a regional anesthesia?

- Prophylaxis of deep venous thrombosis: Waiting for about 6 hours.
- Anti-thrombosis treatment: Waiting for about 24 hours.
- Reintroduction of DOACs only after having removed the neuraxial catheter.
- In combinations of drugs, the wider interval should be applied.
- Reversion of DOACs only in case of emergencies.

### What if despite the precaution, a hemorrhagic complication appears in a regional anesthesia?

- Control on any neurological deficiency that may appear.
- If symptoms appear, perform clinical exam and NMR. If required, surgical decompression is recommended within 6 hours.



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## 2. HOW TO SUPPORT HAEMOSTASIS IN ACUTELY HAEMORRHAGING PATIENTS

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### Should we monitor DOAC levels in patients requiring surgery?

- **Non-urgent surgery:** DOAC level monitoring would not be required in patients not suffering from renal and/or liver failure, and surgery can wait for 24 hours (in case of low risk of surgical bleeding) or 48-72 hours (in case of high risk of surgical bleeding).
- **Urgent surgery** (when a safe time cannot be observed) or patients with **renal or liver failure** (in risk of presenting high DOAC levels), DOAC level monitoring is suggested. The following table shows the usefulness of different coagulation tests based on the DOAC:

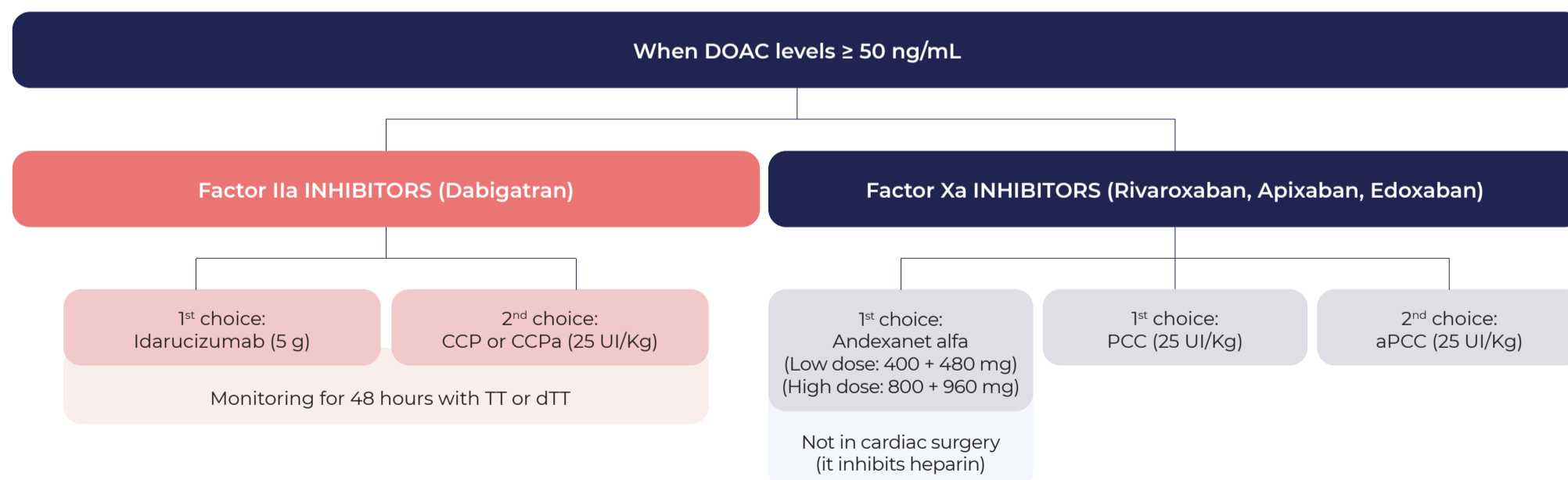
	Dabigatran	Rivaroxaban	Apixaban	Edoxaban
aPTT	✓	✗	✗	?
TT, dTT	✓	✗	✗	✗
ECT	✓	✗	✗	✗
Anti-Xa	✗	✓	✓	✓
PT	✗	✓	✗	✓
INR	✗	✗	✗	✗

aPTT: Activated partial thromboplastin time; TT: Thrombin time; dTT: Diluted thrombin time; ECT: Ecarin clotting time; PT: Prothrombin time; INR: International normalized ratio

Generally speaking, monitoring based on classic coagulation tests (PT and aPTT) are not recommended. Thus, in patients treated with anti-Xa DOACs (Rivaroxaban, apixaban, and edoxaban) monitoring by measuring anti-Xa measurement is suggested, and in patients treated with dabigatran (anti-IIa), dTT or TT are recommended.

### Should we revert coagulation in patients treated with DOACs requiring urgent surgery with antidotes or non-specific hemostatic agents?

Whenever antidotes or hemostatic antidotes are required, **DOAC concentration-guided** management is recommended.



## BIBLIOGRAPHY

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