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PT/INR Is Abnormal: Does It Really Matter?

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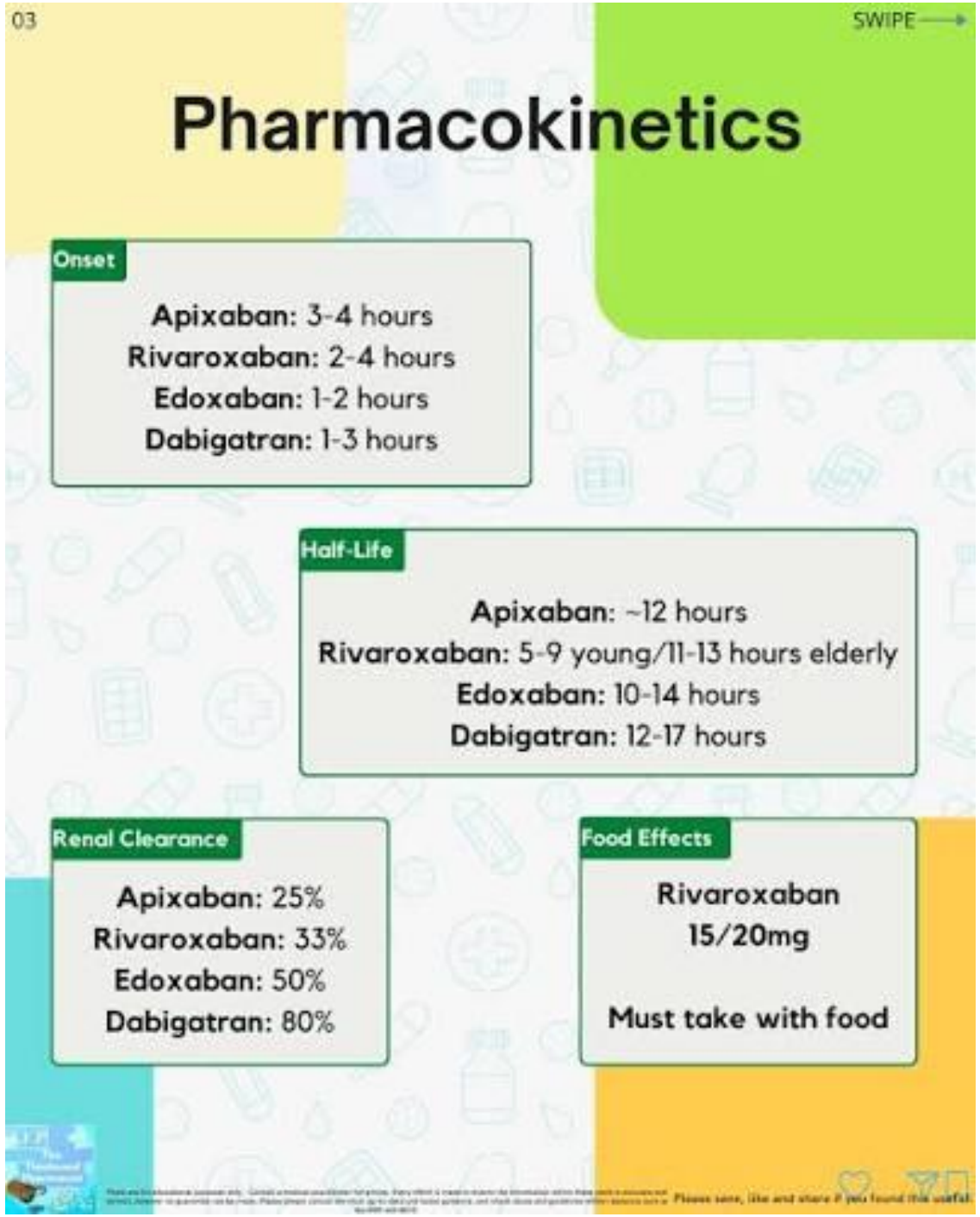
The Case

72-year-old woman

- Elective right hemicolectomy for colon cancer

Hb 8.6 g/dL | Platelets 245,000/µL | PT/INR 1.6 (repeat 1.5) | aPTT 34–35 s



Perioperative Management of DOACs

AMERICAN COLLEGE of CARDIOLOGY

TREATMENT TABLE FOR PERIOPERATIVE MANAGEMENT OF DOACS[1,2]

Drug	Clinical Factor	Discontinuation of Therapy*		Resumption of Therapy†	
	CrCl (mL/min)	Low Bleed-Risk Surgery	High Bleed-Risk Surgery	Low Bleed-Risk Surgery	High Bleed-Risk Surgery
Dabigatran *(direct thrombin inhibitor)*	≥80	24 hours	48 hours	24 hours postoperative	48-72 hours postoperative
	50-79	36 hours	72 hours		
	30-49	48 hours	96 hours		
	15-29	72 hours	120 hours		
	<15	No data, consider direct thrombin time and/or ≥96 hours	No data, consider direct thrombin time		
Apixaban **Edoxaban** **Rivaroxaban** *(anti-XA inhibitor)*	≥30	24 hours	48 hours		
	15-29	36 hours	72 hours		
	<15	No data, consider agent-specific anti-Xa level and/or ≥48 hours	No data, consider agent-specific anti-Xa level and/or ≥72 hours		

* All DOACs carry a black box warning about their use in neuraxial procedures. Refer to prescribing guide or the American Society of Regional Anesthesia and Pain Medicine for guidance on timing of discontinuation in relation to procedure. Situations with renal dysfunction or extenuating circumstances may warrant longer interruptions. Note: DOAC therapy has been continued uninterrupted during atrial fibrillation catheter ablation procedures in patients with high CHA2DS2-VASc scores. Additionally, DOAC therapy has been either minimally interrupted (discontinued 12-24 hours prior to the procedure) or continued among patients with CHA_2DS_2-VASc scores ≥2 requiring pacemaker or defibrillator surgery in whom the risk of thrombosis outweighs risk of bleeding.

The Clinical Question

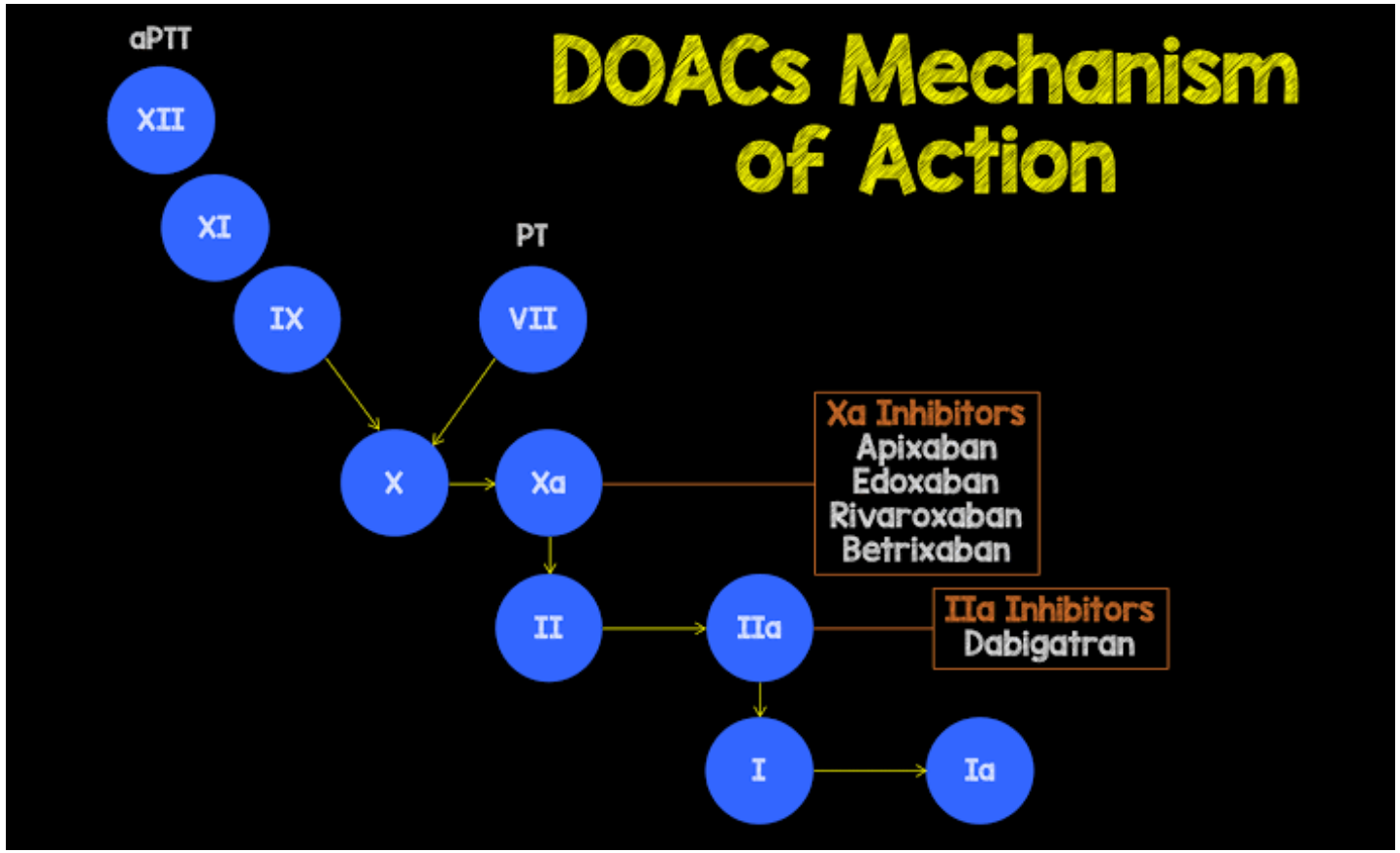
1. What does INR 1.5 mean in a patient taking apixaban?
2. Can routine coagulation tests measure residual DOAC effect?
3. Which assay is useful—and when?
4. Should we give FFP or delay surgery?
5. A practical decision for this elective case

The INR Trap

	Dabigatran (Pradaxa®)	Rivaroxaban (Xarelto®)	Apixaban (Eliquis®)	Edoxaban (Lixiana®)
aPTT	Nonlinear prolongation with increasing dose, a normal result does not exclude an important drug effect	Minimal effect	Minimal effect	Variable effect; a normal result does not exclude an important drug effect
Thrombin clotting time (TCT) Dilute TCT	Normal result excludes an important drug effect dilute TCT (Hemoclot assay) most reliable/accurate	No effect	No effect	No effect
PT/INR	Variable effect	Variable effect; INR frequently 1.4-1.6; a normal result does not exclude an important drug effect	Minimal effect	Variable effect; a normal result does not exclude an important drug effect
anti-factor Xa assay	No effect	Most reliable/accurate	Most reliable/accurate	Most reliable/accurate

Why INR Can Mislead

- INR is standardized for vitamin K antagonists—not apixaban.



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Which Test Answers the Question?

- PT/INR and aPTT: routine context only; poor tests to exclude apixaban effect.

ROTEM / TEG

Useful for global haemostatic assessment and bleeding-guided therapy.
Not validated to quantify or reliably rule out residual apixaban.

Choose the assay that answers the clinical question.

The Number Is Not the Diagnosis

An INR of 1.5 in a patient taking apixaban does not measure residual drug activity—and is not, by itself, an indication for plasma transfusion.

Clinical Interpretation: What Matters?

Before interpreting the result:

- Confirm the last apixaban dose and blood-sampling time
- Review Cockcroft–Gault creatinine clearance (not eGFR alone)
- Check liver profile, interacting drugs and nutritional / vitamin K status
- Confirm the PT reagent / analyzer with the laboratory
- If PT remains prolonged after appropriate drug interruption, investigate other causes

Persistent PT prolongation after drug clearance deserves a separate diagnosis.

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What Each Test Can—and Cannot—Tell You

Test	Useful for	Not reliable for
PT / INR	General coagulation context; VKA monitoring	Quantifying apixaban or excluding residual effect
Apixaban-calibrated anti-Xa	Quantitative apixaban level	Routine monitoring in every elective patient
TEG / ROTEM	Global haemostasis; guiding treatment during bleeding	Measuring or ruling out apixaban activity

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The Decision in This Patient

1

Do not treat the INR

INR 1.5 alone does not quantify apixaban or establish a bleeding disorder.

2

Do not give FFP for the number

INR 1.5 alone does not quantify apixaban or establish a bleeding disorder.

3

Use the clinical timeline

INR 1.5 alone does not quantify apixaban or establish a bleeding disorder.

No FFP solely to correct INR 1.5. Do not delay this elective surgery solely because of the INR.

Clarify the last dose, interruption interval, renal function and alternative causes of prolonged PT.

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Thank You

Questions and Discussion

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