

The background is a dark teal gradient. In the corners, there are decorative white line-art elements resembling circuit traces or neural network connections, with small circles at the end of the lines.

ALL BLEEDING STOPS...EVENTUALLY!

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SAN ANTONIO, TX

The background is a blue gradient with white circuit-like lines in the corners. The lines consist of straight segments and small circles, resembling a network or data flow diagram.

NO DISCLOSURES!

OBJECTIVES

- Discuss different types of DOACs
- Discuss the pharmacokinetics of the DOACs
- Discuss strategies for managing bleeding with DOACs

CASE #1

- 67 yo male with PMHx CHF and atrial fibrillation tripped at home and hit his head on the end table.
- Medications – Metoprolol, Lipitor, dabigatran
 - VS HR 140 RR 24 BP 195/115
 - PE: confused, nonfocal, bruising noted over right temporal area, PERRL
 - Irregularly irregular, CTA, No othe signs of injury
 - Priorities?
 - Airway
 - C-Collar
 - BP management
 - Tests/imaging?

CASE #2

- 44 yo male PMHx DM, Obesity, HTN, DVT
- Riding a motorcycle and crashed leading to a deformed, swollen left thigh
- Medications: Norvasc, Pravachol, Coumadin
- VSS HR 130 RR 22 BP 105/45
- Alert, moderate distress, following commands, PERRL, tachycardic, tachypneic, NTND, painful, tight left thigh with temperature difference between right and left foot. Pulses present bilaterally with decreased sensation in the left LE.
- Priorities?
- Labs/imaging
- Treatment options?

CASE #3

- 25 yo female with PMHx of depression and DVT presents after taking a handful of her “blood thinners”.
- Medications: Xarelto, Zoloft
- Alert, tearful, nonfocal, RRR, CTA, NTND
- Priorities?
- Labs/Tests?
- Treatment options?

CASE #4

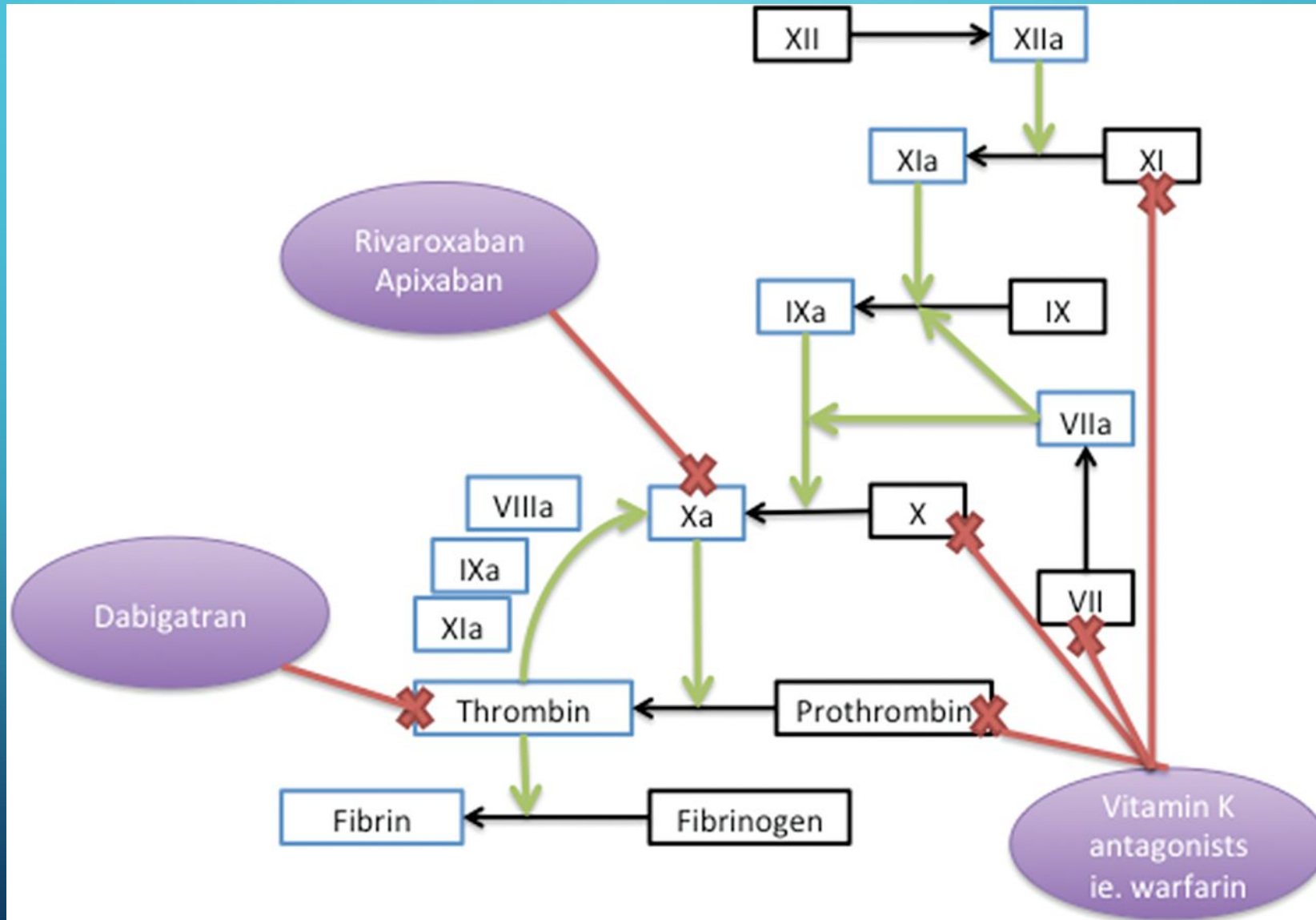
- 71 yo female with PMHx of CHF, CABG, EF 30%, CKD presents with abdominal cramping and lower GI bleed
- Medications: Dabigatran, Zoloft, carvedilol, amiodarone, atorvastatin
- VS HR 60 RR 22 BP 105/50
- Alert, nonfocal, RRR, CTA, NTND, no bruising noted
- Priorities?
- Labs/Tests?
- Treatment options?

CASE #5

- 63 yo male with PMHx of HTN, CKD and Afib presents with chest and back pain.
- Medications: Apixaban, carvedilol,
- VS HR 65 RR 28 BP 115/40
- Alert, nonfocal, IRIRR with holosystolic murmur, CTA, NTND, no bruising noted
- Priorities?
- Labs/Tests?
- Treatment options?



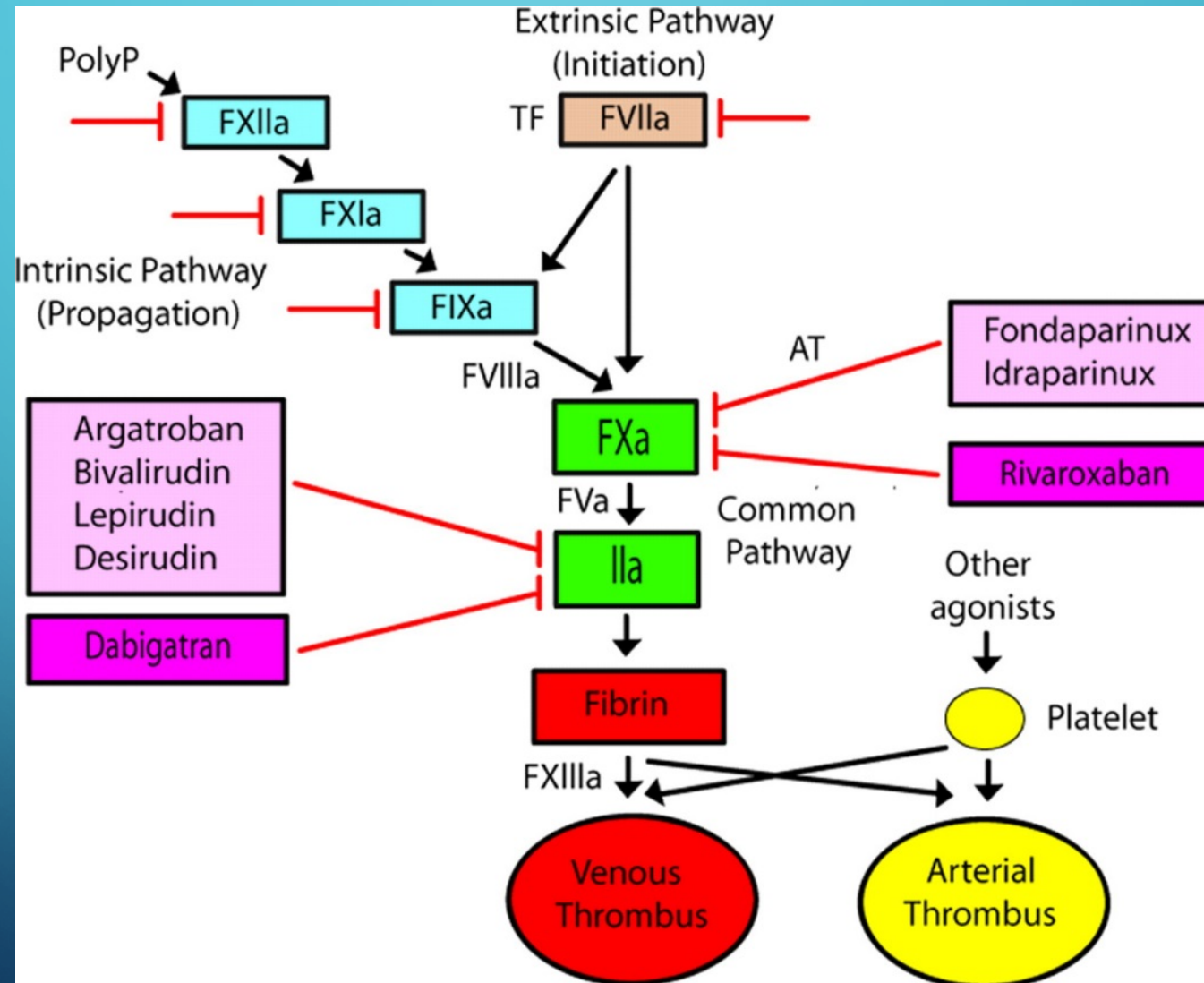
VITAMIN K ANTAGONIST



DOAC – CLASSES

- Direct Thrombin Inhibitor (factor IIa)
 - Dabigatran (Pradaxa)
- Factor Xa inhibitor
 - Rivaroxaban (Xarelto)
 - Edoxaban (Savaysa)
 - Apixaban (Eliquis)

DIRECT THROMBIN INHIBITORS



DIRECT THROMBIN INHIBITORS

- Dabigatran is approved for
 - Nonvalvular afib
 - DVT/PE prophylaxis and treatment
 - Prophylaxis s/p hip and knee surgery
- Pharmacokinetics
 - 12-17 hr $\frac{1}{2}$ life
 - Excretion is 85-90% renal
- Normal TT – NO Dabigatran present

DIRECT THROMBIN INHIBITORS

5 trials with > 27k pts – Afib

- Lower 30 day mortality – 9 vs 13
- Shorter ICU stay – 1.6 vs 2.6
- HIGHER risk of GI bleeding if > 65 –
 - N Engl J Med 2013;368:1272
 - Unmasking of colonic polyps?
- Lower risk of
 - Major bleeding
 - Fatal bleeding
 - Intracranial bleeding

FACTOR XA INHIBITOR

- Rivaroxaban (Xarelto) – Afib/DVT
 - 5-9 hr $\frac{1}{2}$ life
 - Excretion is 35% renal
- Edoxaban (Savaysa) – Afib/DVT
 - 6-11 hr $\frac{1}{2}$ life
 - Excretion is 35 % renal
- Apixaban (Eliquis) – Afib/DVT
 - 8-15 hr $\frac{1}{2}$ life
 - Excretion is 25% renal
- SEVERE HEPATIC IMPAIRMENT CAN CAUSE BIO-ACCUMULATION

FACTOR XA INHIBITOR

- Abnormal PT/PTT suggest drug is present
- However, if PT/PTT normal and patient is bleeding
ASSUME drug is present
- Normal anti-Xa activity strongly excludes drug present
- Apixaban/Eliquis is the **ONLY** FDA approved DOAC for
ESRD



TREATMENT OPTIONS

COUMADIN

- Vitamin K
- PCC – 4 and 3 factor
- FFP/Cryoprecipitate
- F7

Neurocritical Care Society/Society of Critical Care Medicine Antithrombotic Reversal in Intracranial Hemorrhage Guideline Writing Committee

- - October 2012.

DOACs

- Binding with charcoal
- PCC – 4 factor
- aPCC - FEIBA
- Hemodialysis (dabigatran ONLY)
- Idarucizumab/Praxbind (dabigatran ONLY)
- Anti-fibrinolytic (amicar/tranexamic



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 - VS HR 140 RR 24 BP 195/115
 - PE: confused, nonfocal, bruising noted over right temporal area, PERRL
 - Irregularly irregular, CTA, No othe signs of injury
 - TREATMENTS
 - Aggressive BP control
 - Praxbind
 - PCC – 4 factor (Kcentra)
 - Anti-fibrinolytic

CASE #2

- 44 yo male PMHx DM, Obesity, HTN, DVT
- Riding a motorcycle and crashed leading to a deformed, swollen left thigh
- Medications: Norvasc, Pravachol, Coumadin
- VSS HR 130 RR 22 BP 105/45
- Alert, moderate distress, nonfocal, PERRL, tachycardic, tachypneic, painful, tight left thigh with temperature difference between right and left foot. Pulses present, decreased sensation in the left LE.
- TREATMENTS
 - Vit K and PCC – 4 factor
 - F7 and anti-fibrinolytic (DIC)

CASE #3

- 25 yo female with PMHx of depression and DVT presents after taking a handful of her “blood thinners”.
- Medications: Xarelto, Zoloft
- Alert, tearful, nonfocal, RRR, CTA, NTND
- TREATMENT
 - Charcoal
 - PCC – 4 factor

CASE #4

- 71 yo female with PMHx of CHF, CABG, EF 30%, CKD presents with abdominal cramping and lower GI bleed
- Medications: Dabigatran, Zoloft, carvedilol, amiodarone, atorvastatin
- VS HR 60 RR 22 BP 105/50
- Alert, nonfocal, RRR, CTA, NTND, no bruising noted
- TREATMENTS
 - Charcoal
 - Praxbind
 - PCC – 4 factor
 - HD/CRRT

CASE #5

- 63 yo male with PMHx of HTN, CKD and Afib presents with chest and back pain. Medications: Apixaban, carvedilol,
- VS HR 65 RR 28 BP 115/40
- Alert, nonfocal, IRIRR with holosystolic murmur, CTA, NTND, no bruising noted
- TREATMENTS
 - Charcoal
 - PCC 4 factor or aPCC
 - Anti-fibrinolytic

Not to be outdone by a little solar eclipse



**Texas said
"Hold my beer &
watch this shit!!"**



QUESTION #1

- All of the following are recommended in the management of DOAC use and life threatening bleeding:
 - A) FFP
 - B) PCC
 - C) Factor 7
 - D) All of the above

QUESTION #2

- Which medications have been found to increase Dabigatran levels:
- A) Amiodarone
- B) Atorvastatin
- C) Carvedilol
- D) All of the above

QUESTION #3

- Hemodialysis is an effective means of removing the following drugs:
- A) Direct Thrombin Inhibitor
- B) Factor Xa inhibitors
- C) Vitamin K antagonist
- D) None of the above



References on request – PatrickCullinanDO@gmail.com

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