

WWW des Gerinnungsmanagements

Coagulation management

11. Pflegekongress für Intensivmedizin
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Potential conflicts of interest

Lecture and advisory honoraria

- Bayer
- BMS-Pfizer
- CSL Behring
- Sanofi
- Siemens Diagnostics
- Takeda

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Anicoagulants in the perioperative setting - oral

<u>Substance</u>	<u>t_{1/2} (h)</u>	<u>accumulation in renal insufficiency</u>	<u>antidote</u>
Phenprocoumon	80-240	-	Vitamin K, PCC
Acenocoumarol	8-11	-	Vitamin K, PCC
Rivaroxaban	7-11	↑	Andexanet alfa
Apixaban	10	↑	Andexanet alfa
Edoxaban	10-14	↑	
Dabigatran	9-13	↑ ↑	Idarucizumab

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Anicoagulants in the perioperative setting - parenteral

<u>Substance</u>	<u>t_{1/2} (h)</u>	<u>accumulation in renal insufficiency</u>	<u>antidote</u>
UFH kont. iv.	1-2	(↑)	Protamin
LMWH sc.	3-7	(↑) - ↑	(Protamin)
Danaparoid	19-25	↑ ↑	
Fondaparinux	17-21	↑ ↑	
Argatroban	1	-	
Bivalirudin	0.5	(↑)	

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Urgent surgery in patients taking oral anticoagulants (OAC)

- Asses the OAC's residual effect
- Asses its impact on the planned surgery (bleeding risk)
- Asses a possible reversal

Vitamin K antagonists (VKA)

- Phenprocoumon (Marcoumar®), Acenocoumarol (Sintrom®)
- Warfarin (Coumadin®)

Direct oral anticoagulants (DOAC)

- Thrombin antagonist: Dabigatran (Pradaxa®)
- Xa antagonists: Rivaroxaban (Xarelto®), Apixaban (Eliquis®), Edoxaban (Lixiana®)

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Assessment of residual DOAC effect

VKA →

Rivaroxaban pharmacokinetics (according to age, renal function, body weight);
from: SGAR Leitlinie zur Anwendung von Rivaroxaban

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Assessment of residual DOAC effect

VKA

- Quick/PT and INR

DOAK

- Dabigatran (thrombin antagonist)
 - thrombin time (for exclusion)
 - calibrated anti-IIa assay (for quantitation)
- Rivaroxaban, Apixaban, Edoxaban (Xa antagonists)
 - anti-Xa assay (calibrated or „universal“)

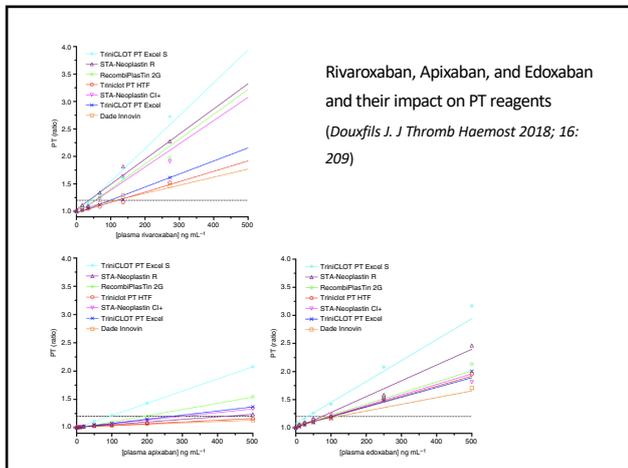
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Assessment of residual DOAC effect

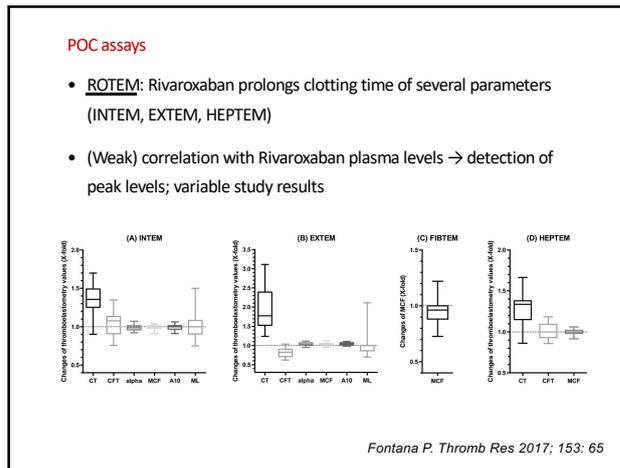
↑ Quick/PT and INR
← aPTT

Normal coagulation times of global assays **do not exclude** residual DOAC plasma levels relevant for surgery
(Kaserer A. Perioperative Medicine 2019; 8: 15)

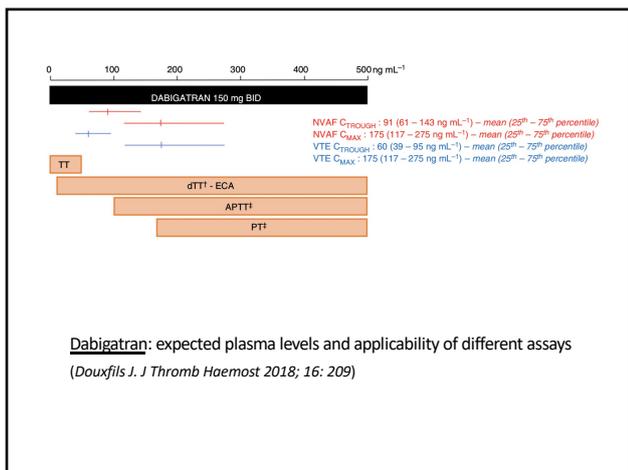
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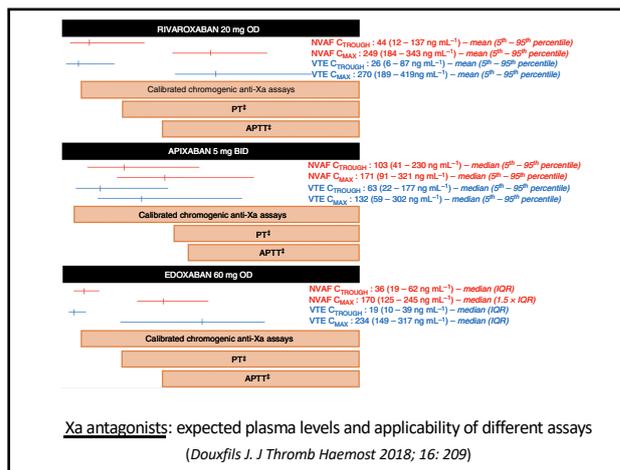
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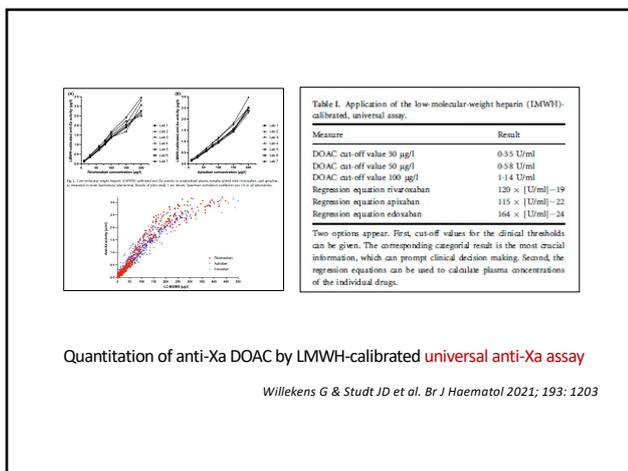
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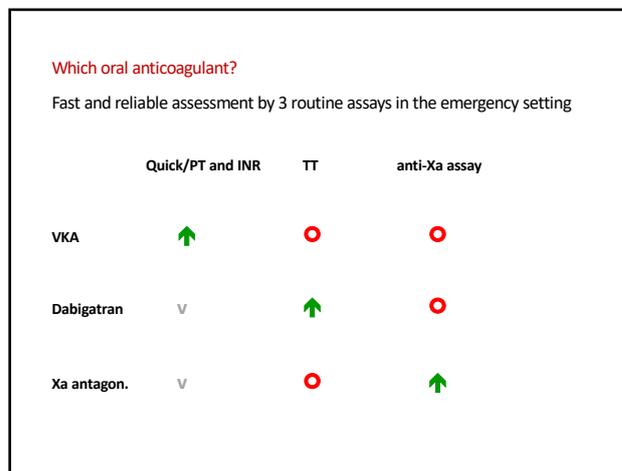
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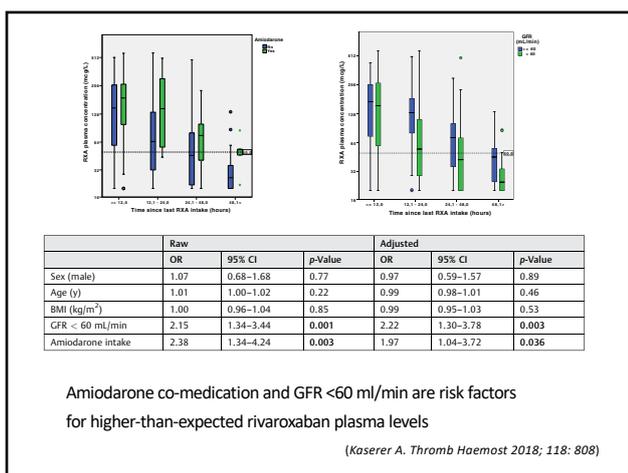
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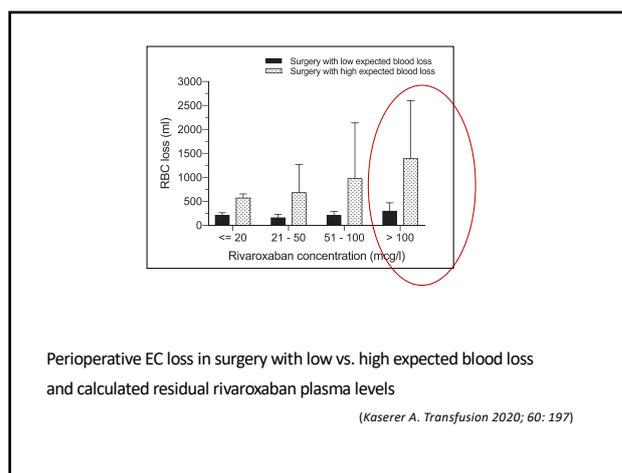
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Anwendung von Dabigatran in der Anästhesiologie

Erarbeitet durch die Expertengruppe «Dabigatran and Anästhesiologie»

Prof. Dr. D. R. Spahn
Prof. Dr. A. Borgeat
Prof. Dr. W. Korte
Prof. Dr. C. Kern
Prof. Dr. J.H. Beer

Anwendung von Apixaban

Guidelines der Expertengruppe «Apixaban und Anästhesiologie»

GUIDELINES DER EXPERTENGRUPPE

ANWENDUNG VON RIVAROXABAN

BEI ERWACHSENEN UND KINDERN



Anwendung von Edoxaban im perioperativen Setting – Guidelines für Anästhesisten

Update 2020

Erarbeitet von der Expertengruppe der Schweizerischen Gesellschaft für Anästhesiologie und Reanimation (SGAR/SSAR):
Prof. Dr. D. R. Spahn, Prof. Dr. U. Eichenberger,
Dr. C. Globan, Prof. med. M. L. Licker, Prof. Dr. C. Kern,
Prof. Dr. W. Korte, Prof. Dr. J. Staffler

SGAR guidelines covering DOAC use in the perioperative setting

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Reversal of OAC

VKA

- Vitamin K (within hrs.)
- Prothrombin complex concentrate (PCC; within min.)

DOAC

- DOAC have a short half-life (approx. 9-13 hrs)
- PCC (off label), high dose of 25-50 U/kg bw
- Specific reversal agents
 - Dabigatran → Idarucizumab (Praxbind®)
 - Rivaroxaban, Apixaban → Andexanet alfa (Ondexxya®)
- Non-selective reversal is not indicated → specific indications and limitations → consult SOP and algorithms

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Reversal of OAC

SOP - example University Hospital Zürich

- **Idarucizumab** (Praxbind®): selected patients anticoagulated with Dabigatran
 - urgent surgery
 - life-threatening or uncontrolled bleeding
 - thrombolysis in ischemic stroke
- **Andexanet alfa** (Ondexxya®)
 - life-threatening or uncontrolled bleeding
 - Rivaroxaban or Apixaban intake within 24 hrs
 - no preceding PCC treatment
 - prognosis not unfavorable
 - board authorization required

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Summary

Urgent surgery in patients taking OAC requires

- Rapid and reliable assessment of the OAC's residual effect
- Assessment of the expected bleeding risk related to this residual effect and the type of surgery
- Assessment of possible OAC reversal in selected patients according to SOP

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