How to prevent and treat catheter-related thrombosis

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Polymed P1Health

PREVENTION OF CR-VTE

RIGHT CATHETER FOR RIGHT PATIENT

-PERIPHERAL OR CENTRAL
-EXTERNAL OR TOTALLY IMPLNTABLE

ASSESSMENT OF RIGHT VENOUS SITE AND SIZE

FOR PERIPHERAL INSERTED CVCs, MIDLINES OR SIMILAR
RESPECT C/V RATIO RANGE
≤ 0.3

RIGHT TECHNIQUE OF IMPLANT AND MANAGEMENT

-PERCUTANEOUS US GUIDED
-MSI AND ANTT
-APPROPRIATE TIP LOCATION
-MANAGEMENT PROTOCOLS

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RISK FACTORS FOR CR-VTE

PATIENT FACTORS

- **Previous history of VTE**
- Cancer and stage of cancer
- Acquired factors (Caprini risk score or similar)
- Congenital factors (AT def., Leiden V, PS/PC def., APC res., other)

FACTORS RELATED TO MATERIALS

- **Catheter size and multilumen larger devices**
- Catheter materials (Thermoplastic PUR or SIL)
- Fixation and stabilization methods for external catheters (PICCs,Midline)

IMPLANTION TECHNIQUE

- **Extensive use of US**
- Venous and site access evaluation
- Reduction of number of tentatives and less parietal damage
- Choice of the vein with a catheter/vein ratio (0.45 0.33)

FACTS AND FIGURES ABOUT CR-VTE

MODERATE INCIDENCE

- Variable rates depending on the type of catheter and patient medical history(0.5-35%)
- Less than 1/3 of CR-T are symptomatic

VERY LOW MORTALITY RATES

- Estimated fatal events attributable to CR-VTE are less than 0.05% (1/5000 events)

ELEVATED CLINICAL IMPACT

- Medical treatmnt and monitoring
- Patient's fear especially for PE
- Increased economic resources

CR-VTE
OBJECTIVE OF TREATMENT

- Reduce symptoms
- Prevent extension of the thrombus
- Prevent chronic venous occlusion
- Prevent VTE recurrence and/or PE
- Maintain the catheter unless no longer needed, non functional, dislodged or infected

Maintain the catheter unless no longer needed, non functional, dislodged or infected

- Even if the catheter is removed anticoagulation is still required to prevent recurrent VTE or PE
- A reinsertion of another catheter is usually needed
- There is no evidence that removal of the catheter improves outcome (ISTH 2013 and ACCP 2016 Guidelines and Recommendations)

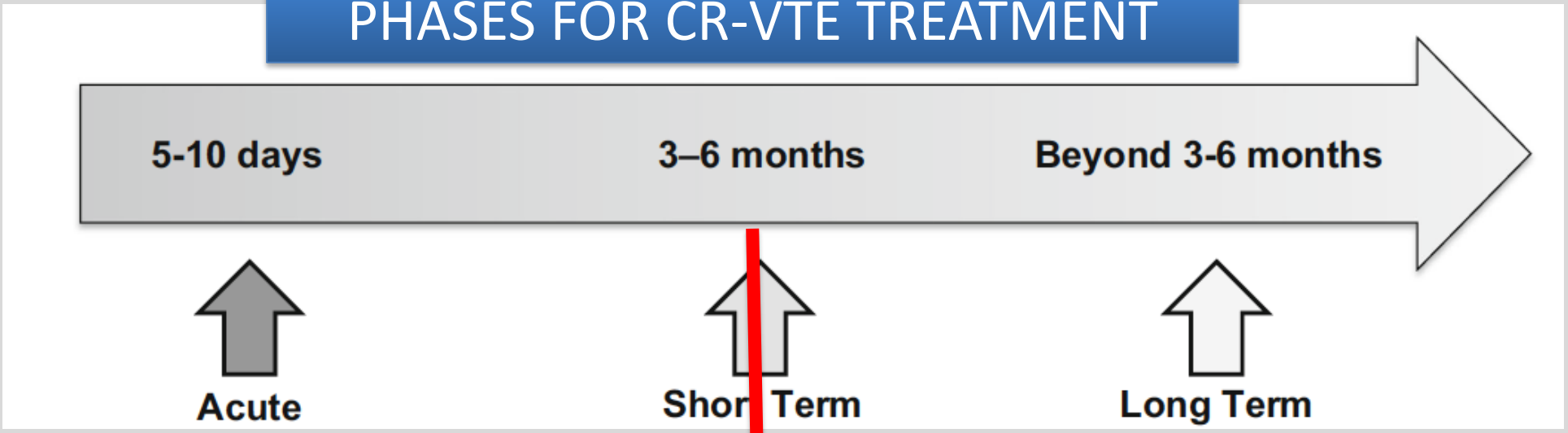
CR-VTE TREATMENT
simple, highly successful and safe

Therapeutic landscape is similar to that of VTE mainly based on anticoagulation obtained by

1. **UFH (only patients with severe renal failure)**
2. **LWMH/ FUNDAPARINUX**
3. **VK antagonists**
4. **DOACs (anti-Xa or thrombin inhibitors)**
5. **Thrombolysis (Urokinase / r-TPA)**

THE DIFFERENT PHASES FOR A CR-VTE TREATMENT

PHASES FOR CR-VTE TREATMENT



INITIAL PHASE

EXTENDED PHASE

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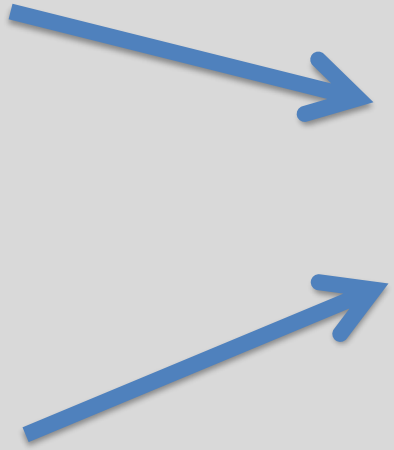
PATIENT RELATED SCENARIOS FOR CR-VTE TREATMENT

NON CANCER PATIENTS

CANCER PATIENTS

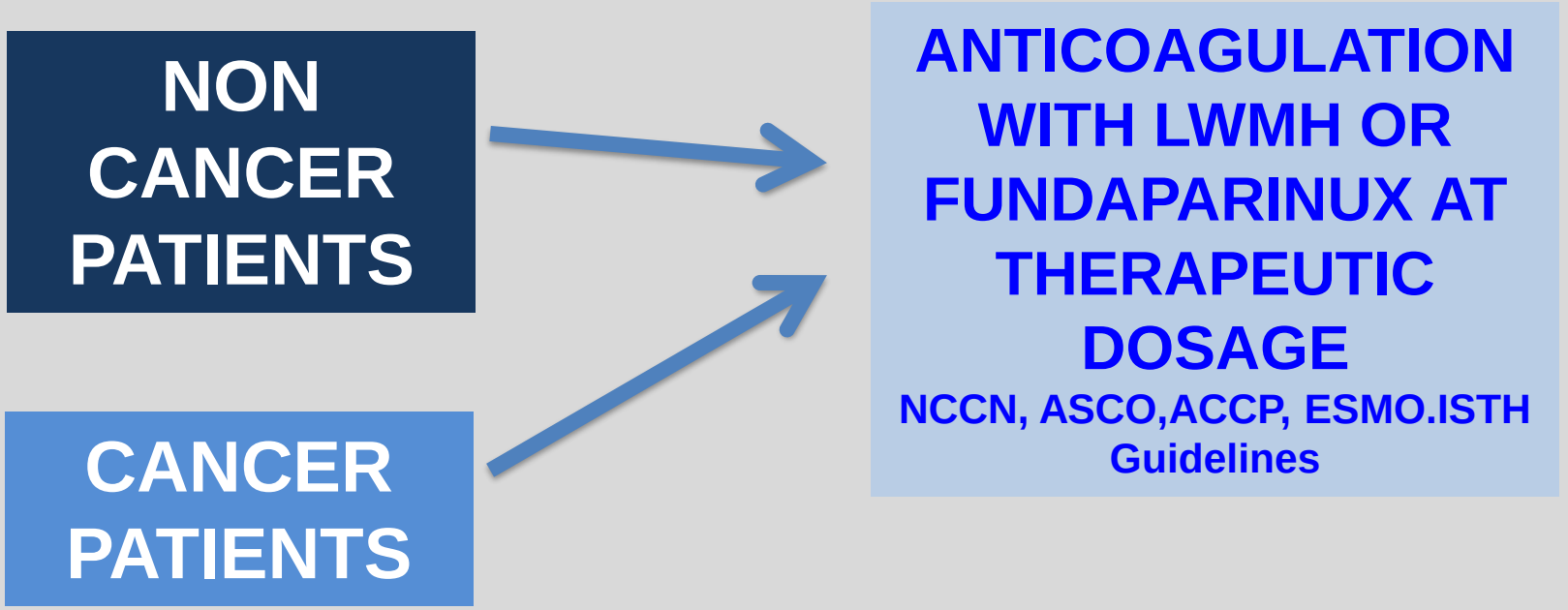


SYMPTOMATIC OR INCIDENTAL ASYMPTOMATIC CR-THROMBOSIS

SIMILAR APPROACH

ALGORYTHM FOR THE MANAGEMENT OF CR-VTE

INITIAL PHASE: from 5 -10 days to 3 months or resolution of symptoms



ALGORYTHM FOR THE MANAGEMENT OF CR-VTE

INITIAL PHASE: There is a marginal role for thrombolysis

- **SVC Syndrome**
- **Acute limb threat**
- **Severe symptoms progression**

Consider r-TPA or urokinase for low bleed risk patients

CONTINUE ANTICOAGULATION

ALGORYTHM FOR THE MANAGEMENT OF CR-VTE

INITIAL PHASE: Therapeutic options

	DOSE SUGGESTED
ENOXAPAIN	1mg/kgb b.i.d 1.5 mg/kg o.d.
DALTEPARIN	100 U/kg b.i.d. 200 U /kg o.d.
NADROPARIN	2850-7600 IU b.i.d. Body weight adjusted
TINZAPARIN	175 U/Kg o.d.
FUNDAPARINUX	5-10 mg o.d. Body weight adjusted

ALGORYTHM FOR THE MANAGEMENT OF CR-VTE

EXTENDED PHASE OF TREATMENT

NON CANCER PATIENTS

(ACCP 2016)

For a minimum of 3 months

Extension > 3 months only for elevated risk patients

- **VKA (INR2-3) superior to LWMH** (Grade 2c)
- **DOACs superior to VKA** (Grade 2B)

ALGORYTHM FOR THE MANAGEMENT OF CRT

EXTENDED TREATMENT

CANCER PATIENTS

(NCCN, ASCO,ESMO,ACCP Guidelines)

Indefinite anticoagulation as long as the CVC is in place, active cancer and CT

- **LWMH or Fundaparinux at prophylactic dosage**
- **Overlap to VKA (INR value target 2-3) can be considered beyond 3-6 months for non advanced/metastatic patients and not active CT**
- **Few data on extended treatment with DOACs for cancer patients**

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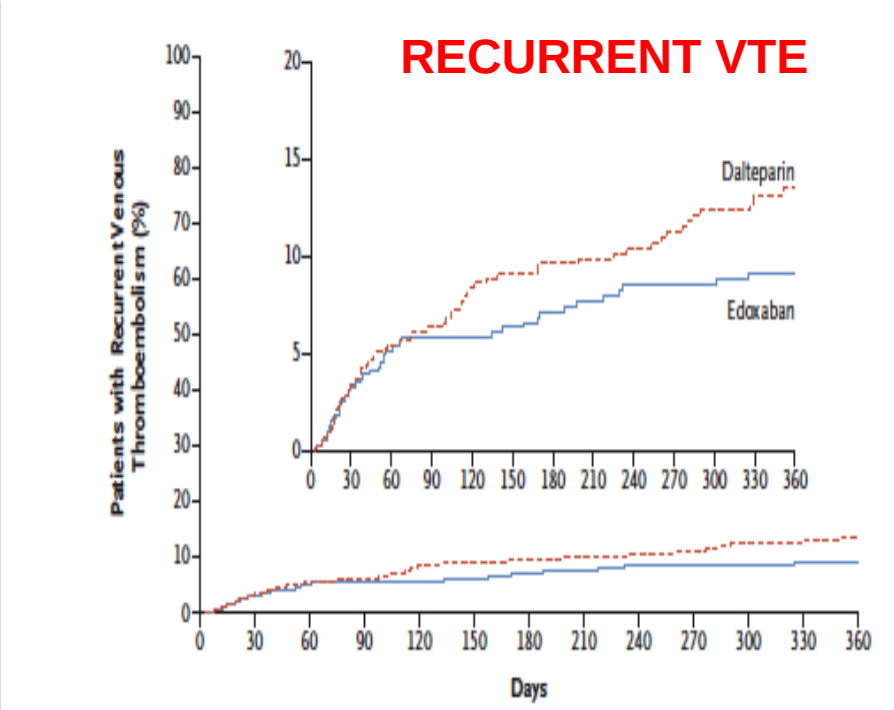
OVERLAP FROM LWMH TO TO ORAL VKA (dose-adjusted to INR) FOR EXTENDED TREATMENT

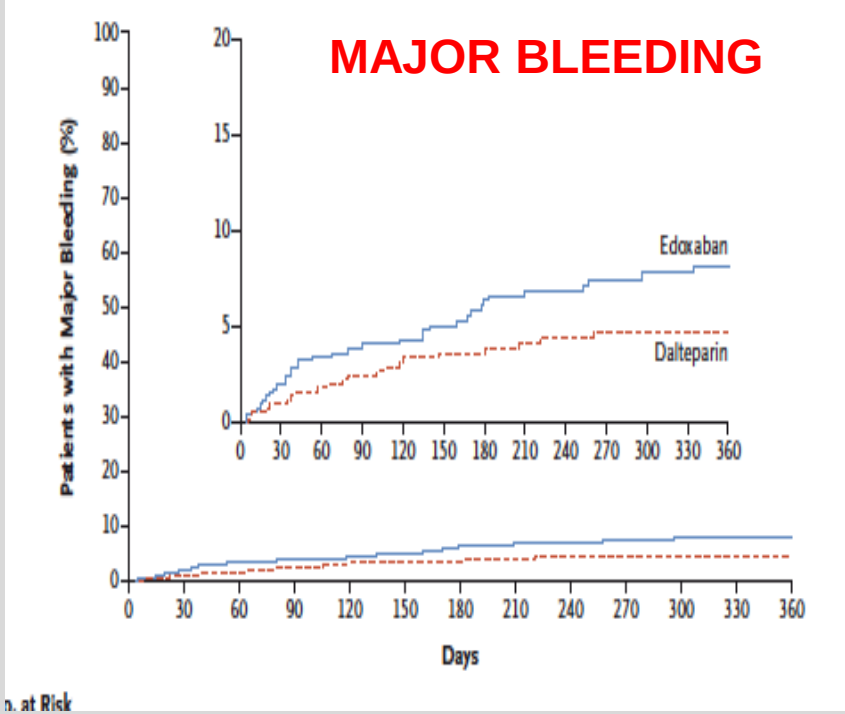
- OVERLAPPING FROM LWMH TO VKA IS FEASIBLE AND SAFE
- NOT INCREASED RISK OF MAJOR BLEEDING
- A SLIGHT LOWER RISK OF RECURRENT VTE AND THE NEED FOR REPEATED INR MONITORING FAVORS LWMH
- THE USE OF VKA (dose-adjusted to INR from 2 to 3) IS NOT INDICATED FOR CANCER PATIENTS WITH ADVANCED OR METASTATIC DISEASE AND ACTIVE CHEMOTHERAPY

Can we use DOACs for extended treatment of CR-VTE in cancer patients?

EDOXABAN FOR THE TREATMENT OF CANCER ASSOCIATED VTE PROBE TRIAL
from HOKUSAI VTE Cancer Investigators
G.E. Raskob, N. van Es, P. Verhamme, et al., N ENGL J MED 2018: 378;615-24

HOKUSAI TRIAL





MAJOR BLEEDING EVENTS OCCURRED MAINLY IN PATIENTS WITH GI TRACT CANCER

Can we use DOACs for extended treatment of CR-VTE in cancer patients?

SELECT-D Trial

VOLUME 36 · NUMBER 20 · JULY 10, 2018
JOURNAL OF CLINICAL ONCOLOGY | RAPID COMMUNICATION

Comparison of an Oral Factor Xa Inhibitor With Low Molecular Weight Heparin in Patients With Cancer With Venous Thromboembolism: Results of a Randomized Trial (SELECT-D)

Annie M. Young, Andrea Marshall, Jenny Thirlwall, Oliver Chapman, Anand Lokare, Catherine Hill, Danielle Hale, Janet A. Dunn, Gary H. Lyman, Charles Hutchinson, Peter MacCallum, Ajay Kakkar, F.D. Richard Hobbs, Stavros Petrou, Jeremy Dale, Christopher J. Poole, Anthony Maraveyas, and Mark Levine

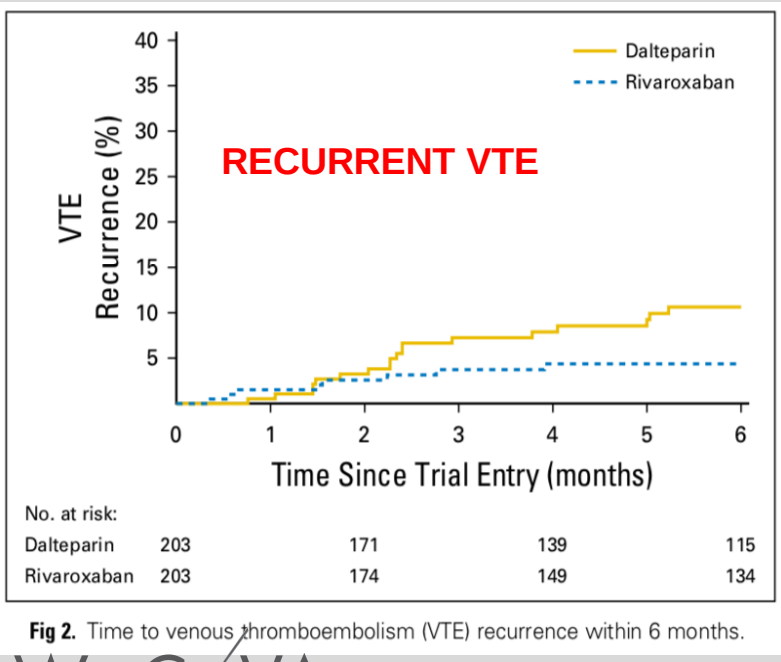


Fig 2. Time to venous thromboembolism (VTE) recurrence within 6 months.

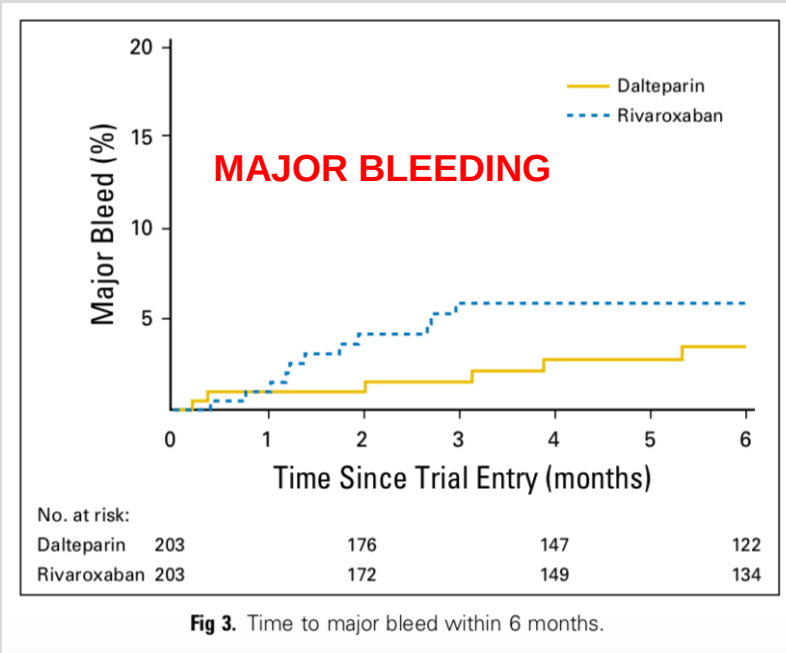


Fig 3. Time to major bleed within 6 months.

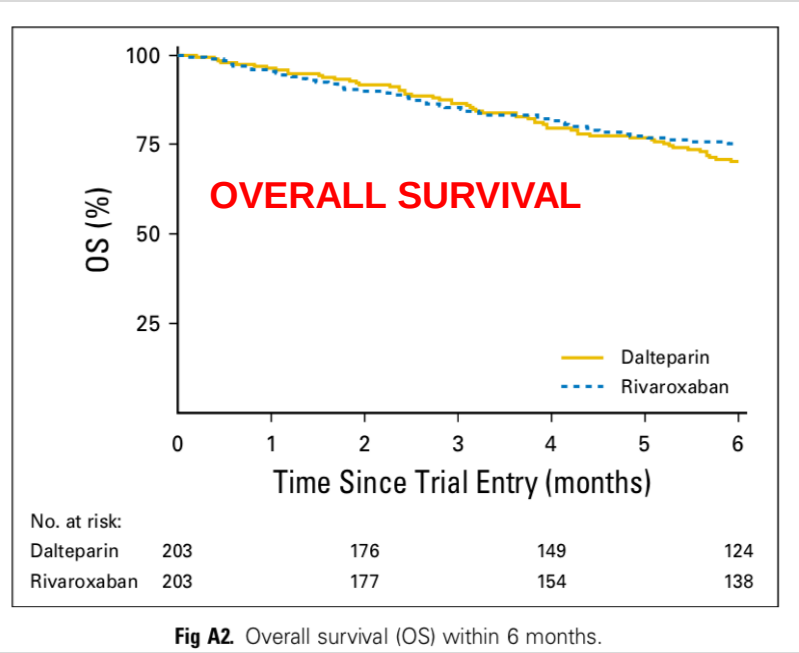
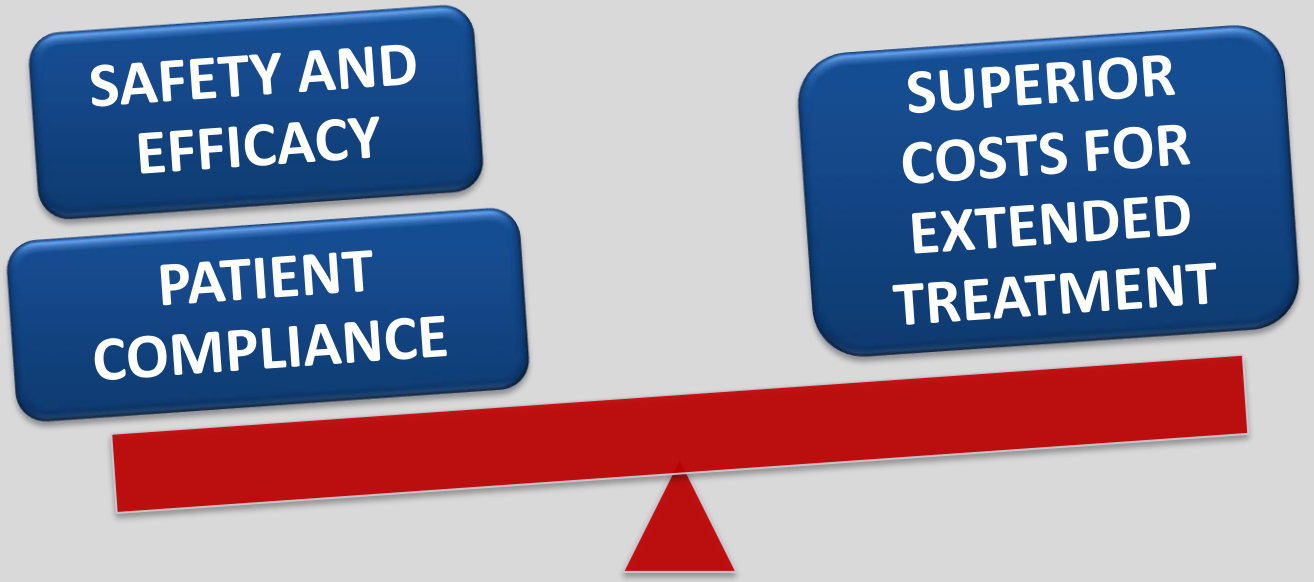


Fig A2. Overall survival (OS) within 6 months.

Can we use DOACs for extended treatment of CR-VTE in cancer patients?

YES AT LEAST FOR EDOXABAN

AND RIVAROXABAN



WE NEED RCTs FOR PATIENTS WITH CR-VTE

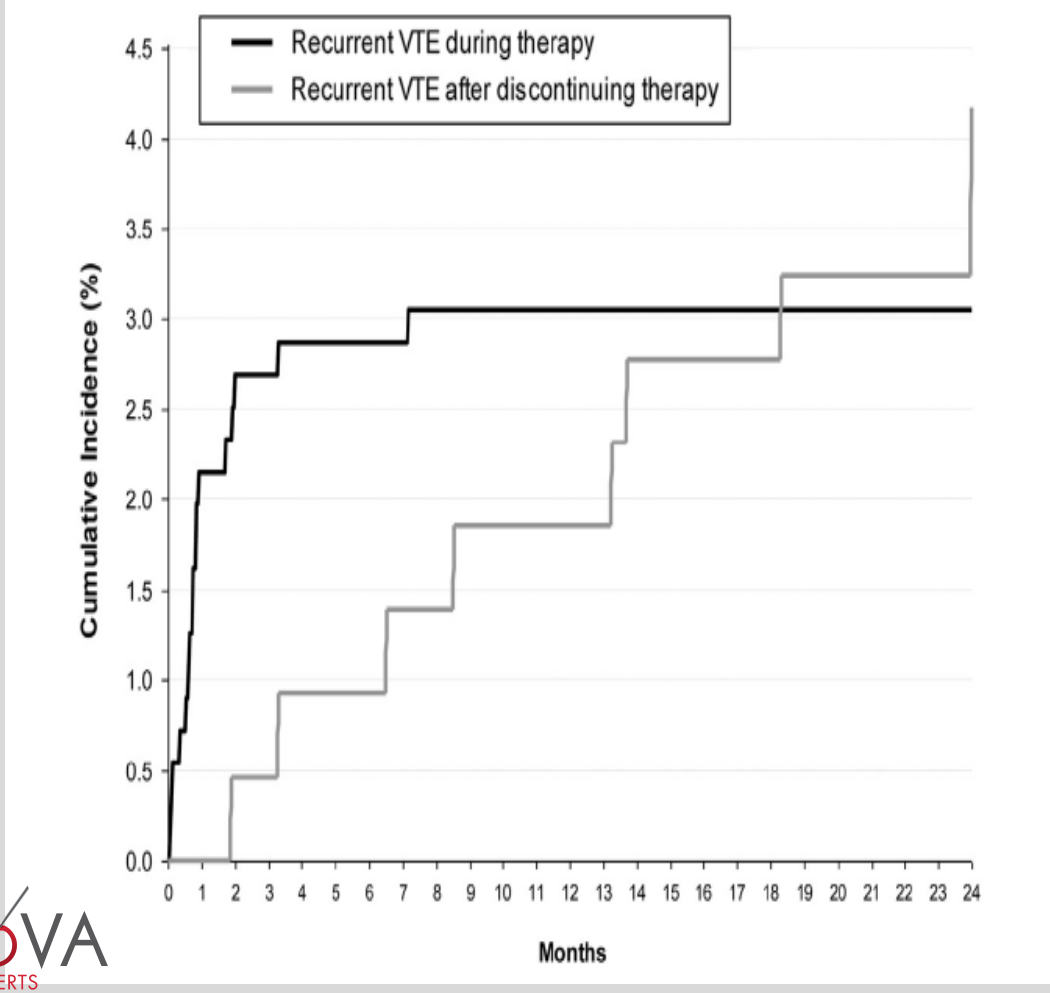
THE NEED FOR EXTENDED TREATMENT IN CASE CR-VTE APPEARS AN OPEN CONTROVERSY

- **REDUCE PERSISTENT OR RECURRENT CR-VTE**
- **PREVENT PE AND RELATED MORTALITY**

Cumulative rates of recurrent thromboembolism in patients with catheter related thrombosis

(RIETE TRIAL Registry 2015)

J VASC SURGERY VENOUS AND LYMPHATIC DISORDERS ,Luly 2015



12 months recurrent DVT/PE and related mortality

GLOBAL RECURRENT DVT	2.58%
GLOBAL RECURRENT PE	1.97%
MORTALITY FOR RECURRENT PE	0.89%

ESTIMATED GLOBAL RISK OF MORTALITY FOR CR-VTE = 1/5.000 THROMBOTIC EVENTS

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Editorial

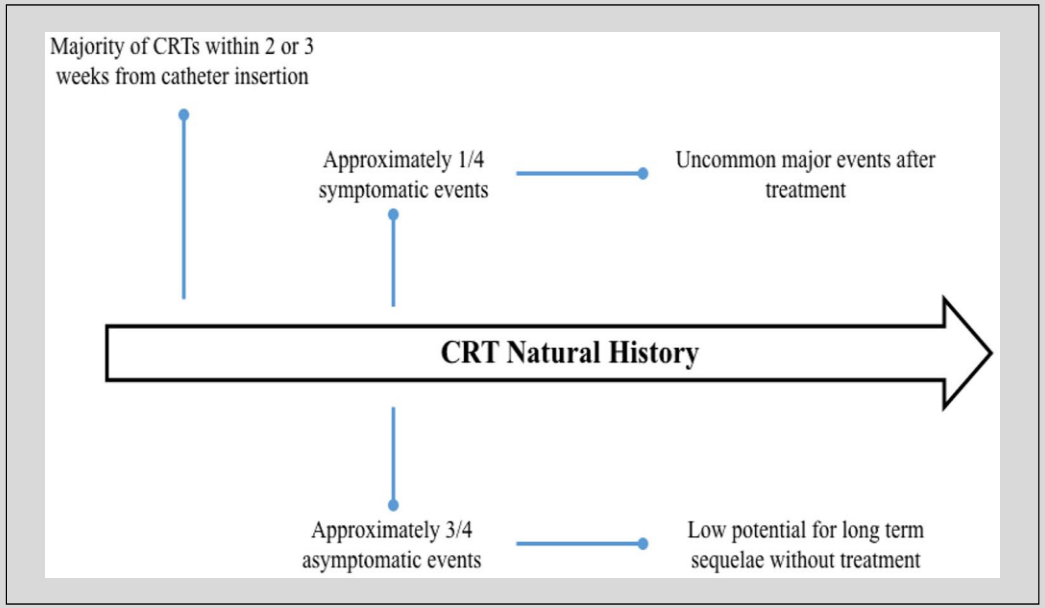
JVA | The Journal of Vascular Access

Catheter-related thrombosis natural history in adult patients: a tale of controversies, misconceptions, and fears

The Journal of Vascular Access
1–3

DOI: 10.1177/1129729819879818
journals.sagepub.com/home/jva
SAGE

Fulvio Pinelli and Paolo Balsorano



- CRT represents an unavoidable event following vessel wall trauma, and it typically occurs within 2 weeks from venous catheter insertion.
- Asymptomatic PICC- and CICC-related thrombosis does not require treatment, and it is not associated with significant risk of sequelae in non-high-risk patients (PE and PTS).
- Symptomatic PICC- and CICC-related thrombosis requires prompt treatment and is not associated with significant risk of sequelae in non-high-risk patients.

THIS POSITION WAS MAINLY BASED ON PEDIATRIC STUDIES

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POSITION BASED ON EBM AND GUIDELINES

PRESENCE OF RISK FACTORS AND PERSISTENCE OF SYMPTOMS

CANCER PATIENT IN ACTIVE TREATMENT

STAY ON EXTENDED ANTICOAGULATION

-NO CANCER PATIENT IN ACTIVE TREATMENT

-ABSENCE OF RISK FACTORS

-CLINICAL RESOLUTION OF THROMBUS AND SYMPTOMS

STOP EXTENDED ANTICOAGULATION

FOR OTHER CLINICAL SCENARIOS FURTHER TRIALS ARE NEEDED

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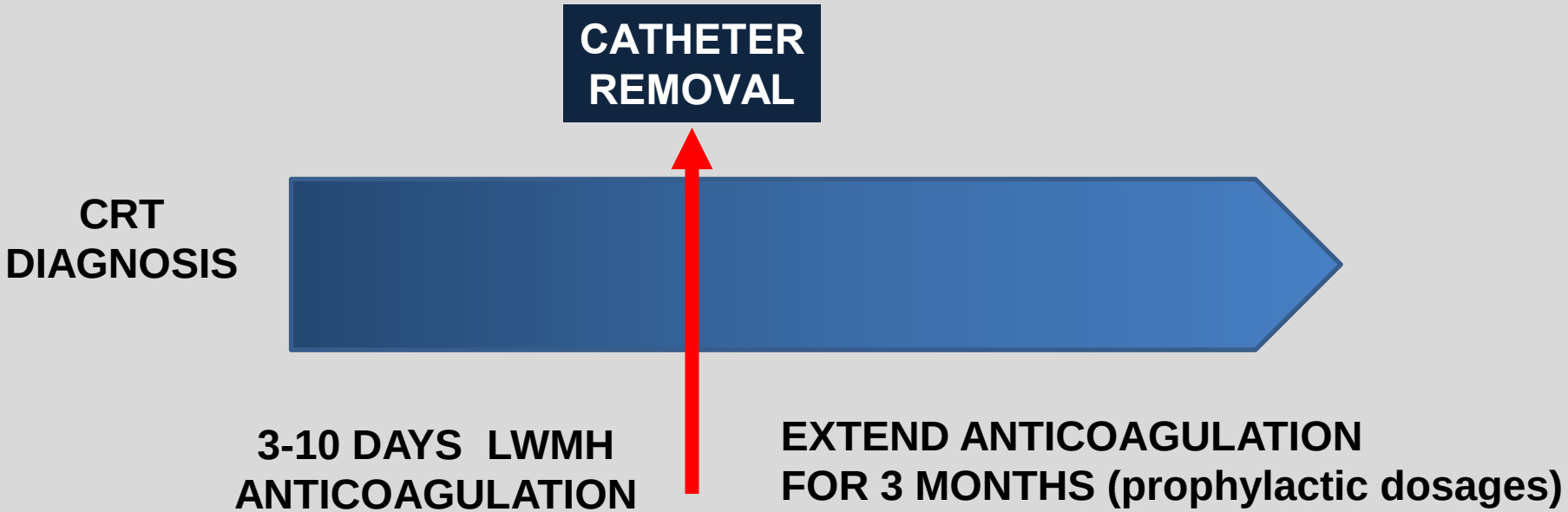
CAHALLENGING SCENARIOS FOR THE CRT TREATMENT

ALHGORITHM FOR CVC REMOVAL (if indicated)

ACCP, ASCO, ISTH, Positions



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