ONCOLOGY GRAND ROUNDS

CANCER-ASSOCIATED VTE

Balancing Risk and Reward with Modern Anticoagulation

cecONCOLOGY

Presented by Creative Educational Concepts LLC • Supported by an educational grant from the Bristol Myers Squibb and Pfizer Alliance

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Disclosures

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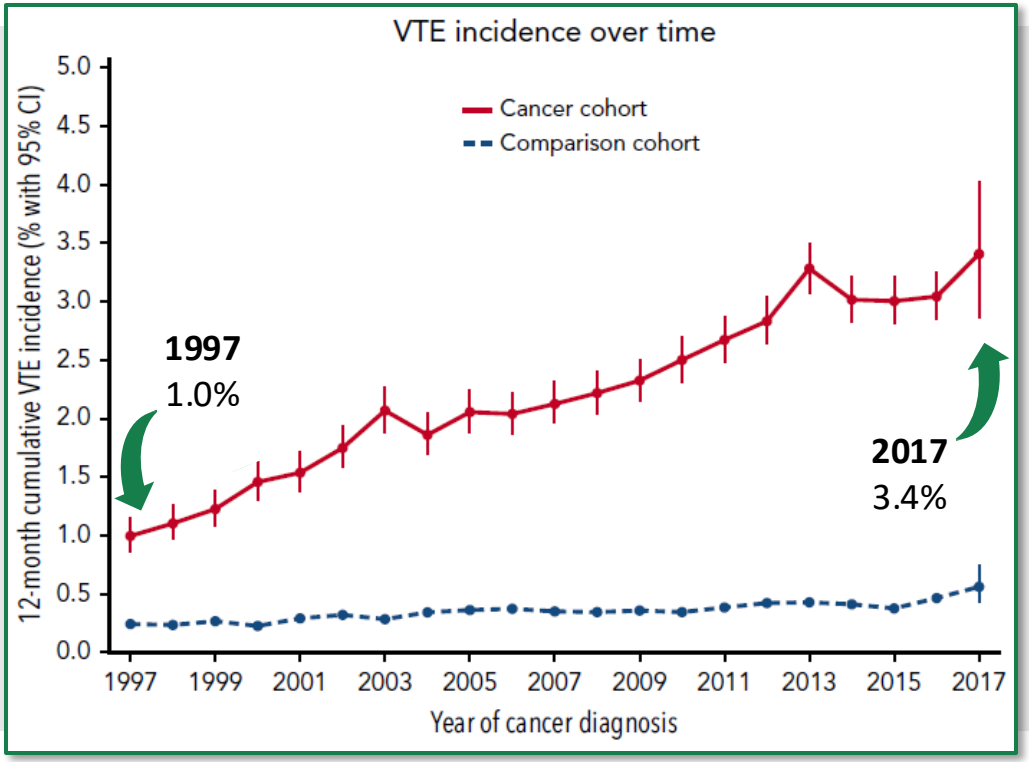
Learning Objectives

1. Identify disease-, treatment-, and patient-related factors that increase the risk for cancer-associated venous thromboembolism (CA-VTE) in patients with cancer
2. Integrate available anticoagulant treatment strategies into practice that also factor in treatment duration
3. Incorporate CA-VTE management strategies aligned to the most current guidelines and evidence in patients with cancer
4. Develop strategies to coordinate care among members of the CA-VTE team, including patients, caregivers, and other health care providers (HCPs), to achieve optimal adherence and CA-VTE outcomes

Cumulative Incidence of Cancer-associated Thrombosis Is Increasing over Time

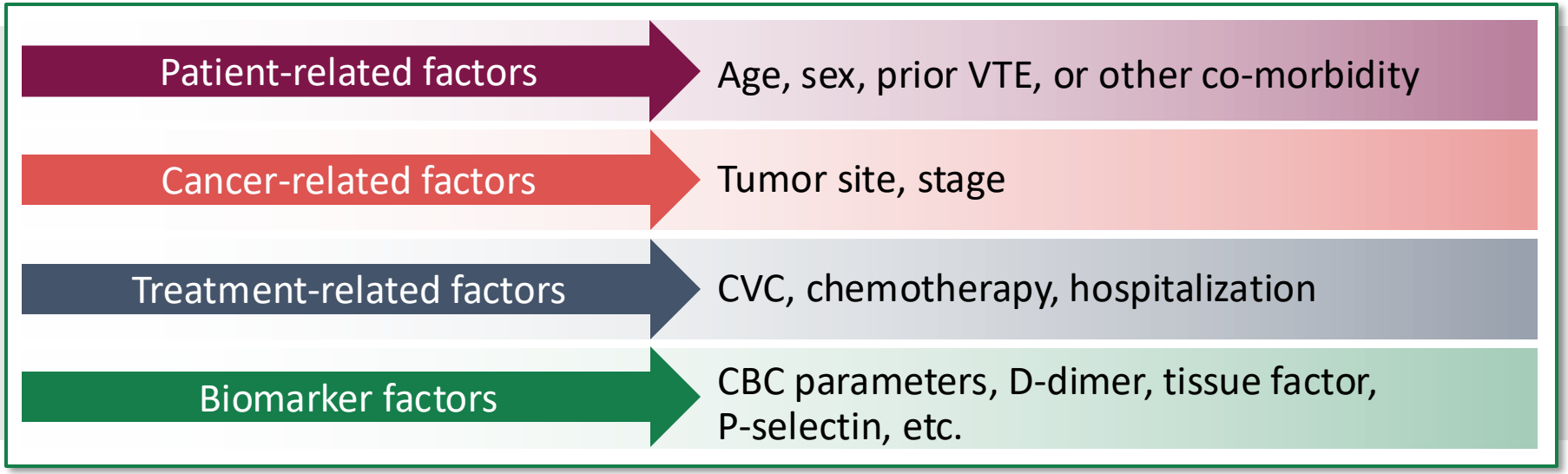
- 12-month cumulative VTE incidence increasing by 3-fold for cancer patients, and even 6-fold for those receiving chemotherapy or targeted therapy
- This increase was paralleled by improved 12-month survival and increased use of CT scans



CT, computed tomography; VTE, venous thromboembolism.

Mulder FI, et al. *Blood.* 2021;137(14):1959–1969.

Individual VTE Risk Factors



Individual risk factors do not reliably identify patients with cancer at high risk of VTE. In the outpatient setting, risk assessment can be conducted based on a validated risk assessment tool.

CBC, complete blood count; CVC, central venous catheter; sP-selectin, soluble P-selectin.

Imberti D, et al. *Thromb Res.* 2016;140(Suppl 1):S103–S108.

VTE Risk Stratification in Ambulatory Cancer Patients Receiving Chemotherapy

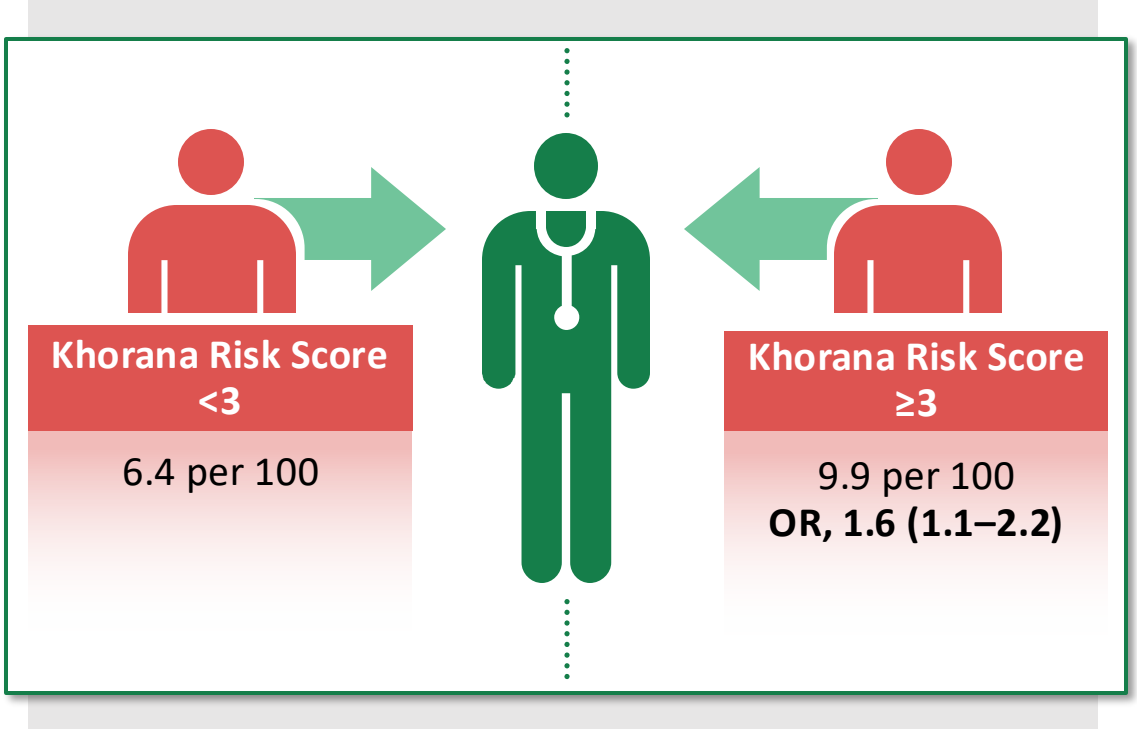
Khorana Risk Score Factor	Points
Site of primary tumor	
• Very high risk (stomach, pancreas)	2
• High risk (lung, lymphoma, gynecologic, bladder, testicular)	1
• All other sites	0
Pre-chemotherapy platelet count ≥350,000/µL	1
Hemoglobin level <100 g/L **or use of ESAs**	1
Pre-chemotherapy **WBC** >11,000/µL	1
BMI ≥35 kg/m^2	1

Khorana Score	Risk of VTE at 6 months
Low risk (0)	1.5%
Intermediate risk (1–2)	3.8% 9.6%
High risk (≥3)	17.7%

BMI, body mass index; ESAs, erythropoiesis-stimulating agents; WBC, white blood cells.

Khorana AA, et al. *Blood.* 2008;111(10):4902–4907.

Prognostic Performance of the Khorana Score



- Individual patient level meta-analysis (N=3,293)
- The 6-month cumulative VTE incidence
  - 4.1% among low-risk patients (95% CI, 1.9–8.4)
  - 6.8% among intermediate-risk patients (95% CI, 4.5–10)
  - 10% among the high-risk patients (95% CI, 6.7–15)
- The dichotomous Khorana Risk Score performed differently in specific cancer types
  - Lung cancer patients (OR, 1.1; 95% CI, 0.72–1.7)
  - Other cancer types (OR, 3.2; 95% CI, 1.8–5.6)

Van Es N, et al. *J Thromb Haemost*. 2020;18(8):1940–1951.

Patient Case

A 57-year-old male was recently diagnosed with metastatic pancreatic cancer.

His medical history includes:

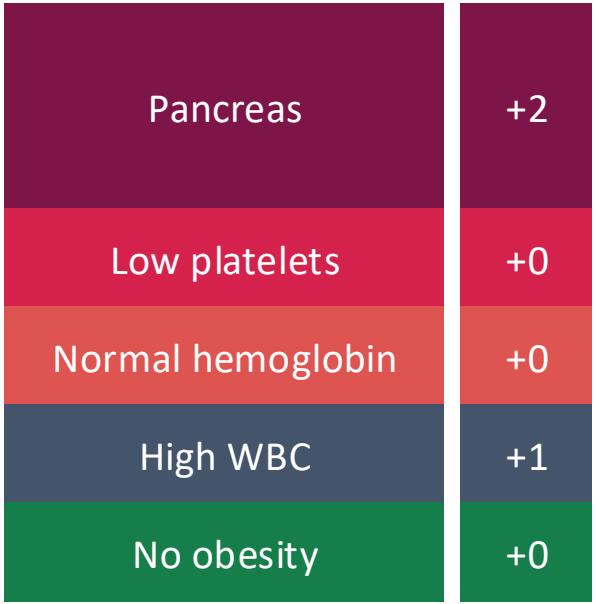
- Intermittent abdominal pain for 5 months, with increasing frequency
- Laboratory studies find a WBC of 112 k/µL, hemoglobin of 10.7 g/dL, and platelets were 67k
- His history is positive for hypertension, controlled on lisinopril

What is his risk of VTE?

CLL, chronic lymphocytic leukemia; FISH, fluorescence in situ hybridization; NGS, next-generation sequencing.

Patient Case

Khorana Risk Score Factor	Points
Site of primary tumor	
• Very high risk (stomach, pancreas)	2
• High risk (lung, lymphoma, gynecologic, bladder, testicular)	1
• All other sites	0
Pre-chemotherapy platelet count ≥350,000/µL	1
Hemoglobin level <100 g/L **or use of ESAs**	1
Pre-chemotherapy **WBC** >11,000/µL	1
BMI ≥35 kg/m^2	1



Khorana Score
Low risk 0
Intermediate risk 1–2
High risk ≥3

Khorana AA, et al. *Blood.* 2008;111(10):4902–4907.

Summary of Primary Prophylaxis

- VTE is a common complication among ambulatory cancer patients receiving systemic therapy and its cumulative incidence is increasing over time
- Risk stratification scores (Khorana score) can help clinicians identify patients at higher risk of VTE
- Primary thromboprophylaxis using LMWH or DOACs provides a favorable risk benefit ratio

ASCO 2020 Guidelines

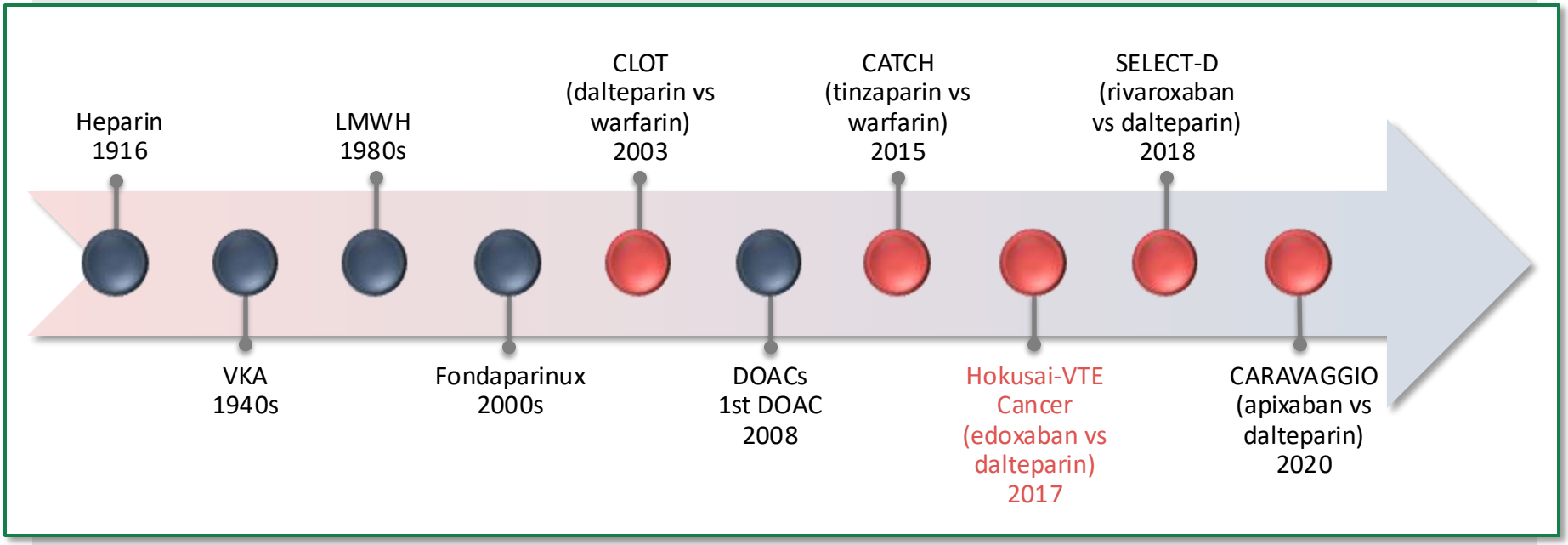
Ambulatory patients with cancer receiving systemic therapy:

- Routine pharmacologic thromboprophylaxis should not be offered to all outpatients with cancer
- High-risk outpatients with cancer (Khorana score ≥2) may be offered thromboprophylaxis with apixaban, rivaroxaban, or LMWH provided there are no significant risk factors for bleeding and no drug interactions
  - Consideration of such therapy should be accompanied by a discussion with the patient about the relative benefits and harms, drug cost, and duration of prophylaxis in this setting
- Patients receiving medications associated with higher risk of VTE/PE (e.g., thalidomide or lenalidomide) should be offered LMWH to prevent blood clots

PE, pulmonary embolism.

Key NS, et al. *J Clin Oncol.* 2023;41(16):3063-3071.

Evolution of Anticoagulant Therapy



DOAC, direct oral anticoagulant; LMWH, low–molecular-weight heparin; VKA, vitamin K antagonist.

Slide courtesy of Dr. Marc Carrie.

Considerations for Selecting an Anticoagulant

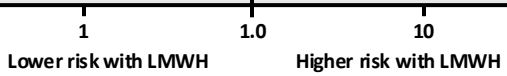
- Efficacy
- Safety
- Tumor Type
- Intracranial Disease
- Drug Interactions
- Comorbidities
- Patient Preferences

LMWH vs VKA

Better Efficacy, Similar Safety

Recurrent VTE

	No. patients with event/ No. of patients		Recurrent VTE Relative Risk (95% CI)	Weight	Relative risk (95% CI)
	LMWH	VKA			
Meyer	2/71	3/75		3.8%	0.7 (0.12–4.09)
Lee	27/336	53/336		68.6%	0.51 (0.33–0.79)
Hull	6/100	10/100		12.9%	0.6 (0.23–1.59)
Deitcher	4/61	3/30		5.2%	0.66 (0.16–2.74)
Romera	2/36	7/33		9.5%	0.26 (0.06–1.17)
Pooled, random effects	41/604	76/574		100%	0.52 (0.36–0.74)



Major Bleeding

	No. patients with event/ No. of patients		Relative Risk (95% CI)	Weight	Relative risk (95% CI)
	LMWH	VKA			
Meyer	5/71	12/75		22.3%	0.4 (0.13–1.19)
Lee	19/338	12/335		49.2%	1.6 (0.77–3.36)
Hull	7/100	7/100		22.8%	1.0 (0.34–2.96)
Deitcher	6/67	1/34		5.8%	3.25 (0.37–28.12)
Pooled, random effects	37/576	32/544		100%	1.06 (0.5–2.23)

CI, confidence interval.

Carrier M, et al. *Thromb Res.* 2014;134(6):1214–1249.

ADAM VTE Trial

Key Eligibility Criteria

- Patients had active cancer
- Qualifying thrombosis (acute lower extremity or upper extremity DVT, PE, splanchnic, or cerebral vein thrombosis)

Stratification
- Cancer status
- VTE risk using Khorana score

RANDOMIZED

1:1

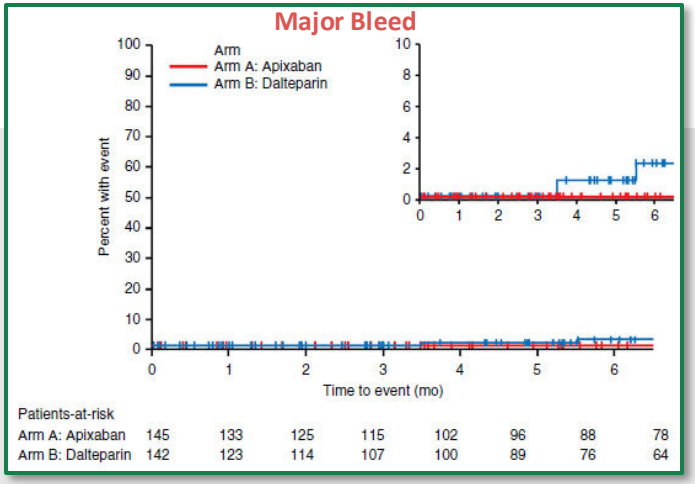
Apixaban (n=145)
10 mg twice daily for 7 days
5 mg twice daily thereafter

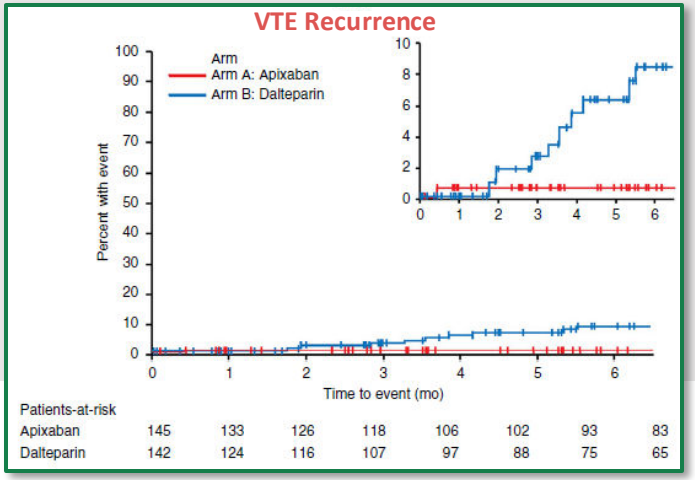
Dalteparin (n=142)
Weight-based SC therapy at 200 IU/kg once daily for the first month, followed by 150 IU/kg for months 2–6

Primary endpoints: Major bleeding (overt bleeding + Hgb decrease ≥2 g/dL; transfusion ≥2 units RBC; CNS bleeding)

Secondary endpoints: Recurrent DVT (PE, fatal PE, or ATE)

ATE, arterial thromboembolism; CNS, central nervous system; DVT, deep vein thrombosis; PE, pulmonary embolism; RBC, red blood cells; SC, subcutaneous.





DOAC vs LMWH Randomized Trials

Trial Characteristics	HOKUSAI-VTE Cancer	SELECT-D	CARAVAGGIO	ADAM VTE
Design and sample size	Non-inferiority Phase 3 (N=1,046)	Pilot (N=406)	Non-inferiority Phase 3 (N=1,155)	Superiority Phase 3 (N=287)
DOAC	LMWH × 5 days then edoxaban 60 mg PO daily	Rivaroxaban 15 mg BID × 21 days then 20 mg daily	Apixaban 10 mg BID × 7 days then 5 mg BID	10 mg twice daily 7 d 5 mg twice daily thereafter
LMWH	Dalteparin 200 U/kg daily × 1 month then 150 U/Kg daily	Dalteparin 200 U/kg daily × 1 month then 150 U/Kg daily	Dalteparin 200 U/kg daily × 1 month then 150 U/Kg daily	Dalteparin 200 U/kg daily × 1 month then 150 U/Kg daily
DOAC dose reduction	<60 kg; CrCl: 30–50 cc/min; drug-to-drug interactions	—	—	—
Primary outcome	Recurrent VTE or major bleeding	Recurrent VTE	Recurrent VTE	Major bleeding
Duration of treatment	12 months	6 months	6 months	6 months

BID, twice daily; CrCl, creatinine clearance; PO, by mouth.

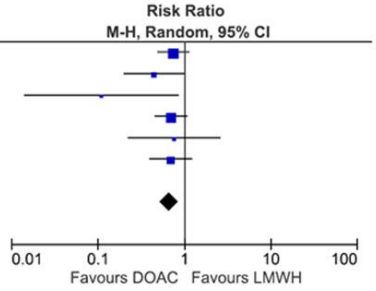
Raskob GE, et al. *N Engl J Med*. 2018;378(7):615–624. Young AM, et al. *J Clin Oncol*. 2018;36(20):2017–2023. Agnelli G, et al. *N Engl J Med*. 2020;382:1599–1607. McBane RD II, et al. *J Thromb Haem*. 2020;18(2):411–421.

Recurrent VTE and Major Bleeding

Recurrent VTE: LMWH 8.3% vs DOAC 5.4%

Study or Subgroup	DOAC Events	DOAC Total	LMWH Events	LMWH Total	Weight	Risk Ratio M-H, Random, 95% CI
HOKUSAI-VTE CANCER	34	522	46	524	33.5%	0.74 [0.48, 1.14]
SELECT-D	8	203	18	203	9.3%	0.44 [0.20, 1.00]
ADAM-VTE	1	145	9	142	1.4%	0.11 [0.01, 0.85]
CARAVAGGIO	32	576	46	579	32.0%	0.70 [0.45, 1.08]
CASTA-DIVA	4	74	6	84	4.1%	0.76 [0.22, 2.58]
CANVAS	20	330	27	308	19.6%	0.69 [0.40, 1.21]
Total (95% CI)		**1850**		**1840**	**100.0%**	**0.67 [0.52, 0.85]**
Total events	99		152			

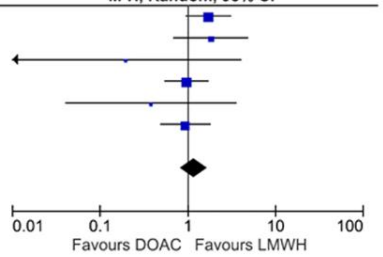
Heterogeneity: Tau² = 0.00; Chi² = 4.36, df = 5 (P = 0.50); I² = 0%
Test for overall effect: Z = 3.22 (P = 0.001)



Major Bleeding: LMWH 3.7% vs DOAC 4.3%

Study or Subgroup	DOAC Events	DOAC Total	LMWH Events	LMWH Total	Weight	Risk Ratio M-H, Random, 95% CI
HOKUSAI-VTE CANCER	29	522	17	524	29.2%	1.71 [0.95, 3.08]
SELECT-D	11	203	6	203	12.2%	1.83 [0.69, 4.86]
ADAM-VTE	0	145	2	142	1.4%	0.20 [0.01, 4.04]
CARAVAGGIO	22	576	23	579	30.3%	0.96 [0.54, 1.71]
CASTA-DIVA	1	74	3	84	2.5%	0.38 [0.04, 3.56]
CANVAS	17	330	17	308	24.5%	0.93 [0.49, 1.80]
Total (95% CI)		**1850**		**1840**	**100.0%**	**1.17 [0.82, 1.67]**
Total events	80		68			

Heterogeneity: Tau² = 0.02; Chi² = 5.66, df = 5 (P = 0.34); I² = 12%
Test for overall effect: Z = 0.85 (P = 0.39)



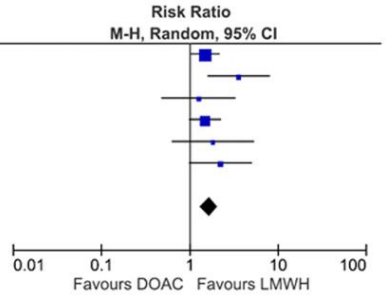
Clinically Relevant Non-major Bleeding

CRNMB: LMWH 5.7% vs DOAC 9.6%

Study or Subgroup	DOAC Events	DOAC Total	LMWH Events	LMWH Total	Weight	Risk Ratio M-H, Random, 95% CI
HOKUSAI-VTE CANCER	64	522	43	524	40.6%	1.49 [1.04, 2.16]
SELECT-D	25	203	7	203	8.2%	3.57 [1.58, 8.07]
ADAM-VTE	9	145	7	142	5.9%	1.26 [0.48, 3.29]
CARAVAGGIO	52	576	35	579	32.1%	1.49 [0.99, 2.26]
CASTA-DIVA	8	74	5	84	4.8%	1.82 [0.62, 5.31]
CANVAS	19	330	8	308	8.3%	2.22 [0.98, 4.99]
Total (95% CI)		**1850**		**1840**	**100.0%**	**1.66 [1.31, 2.09]**
Total events	177		105			

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 4.82$, df = 5 (P = 0.44); $I^2 = 0\%$

Test for overall effect: Z = 4.23 (P < 0.0001)

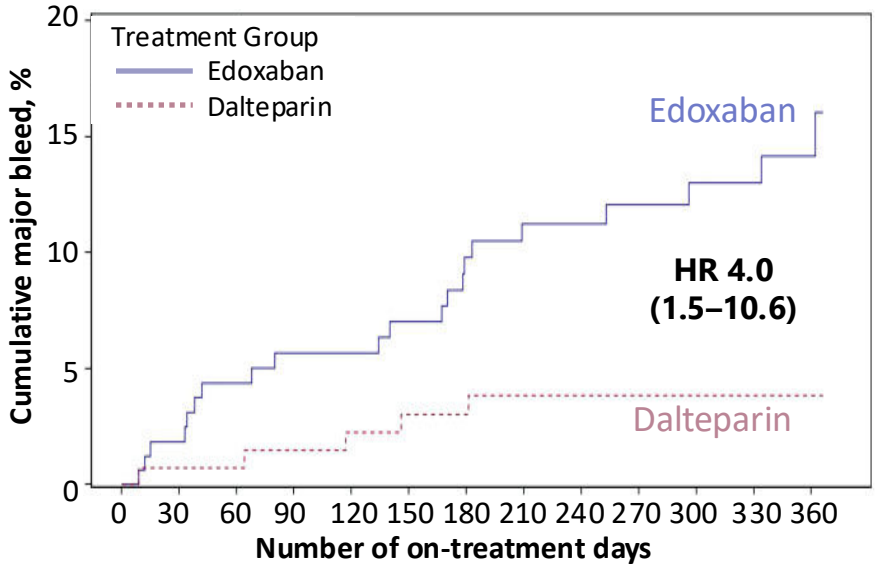


- Clinically relevant non-major bleeding (CRNMB): any sign or symptom of hemorrhage that does not fit criteria for major bleeding but meets at least one of the following
  - Requires medical intervention by a healthcare professional
  - Leads to hospitalization or increased level of care
  - Prompts a face-to-face evaluation

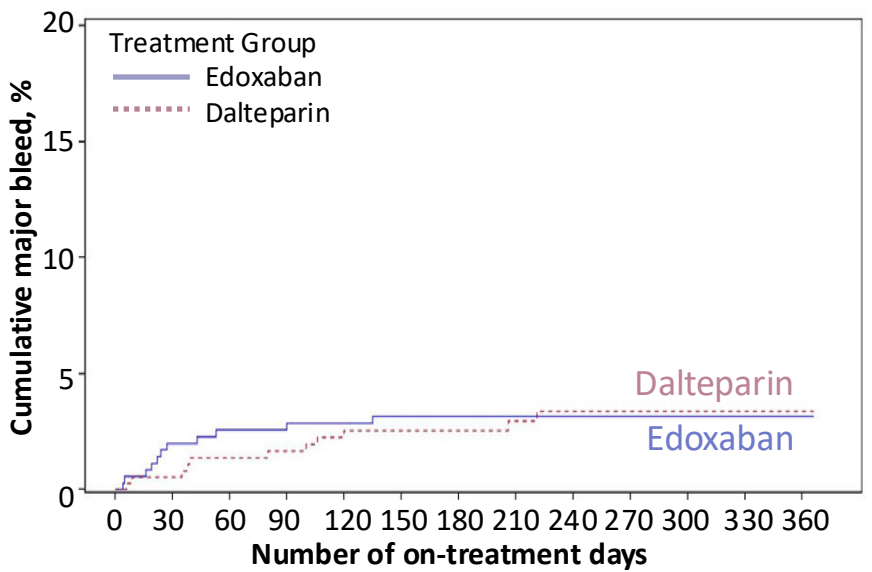
Frere C, et al. *J Hematol Oncol.* 2022;15(1):69.

Major Bleeding by Tumor Type

GI Cancers



Non-GI Cancers



- No fatal bleeds in edoxaban group
- 2 fatal bleeds in dalteparin group

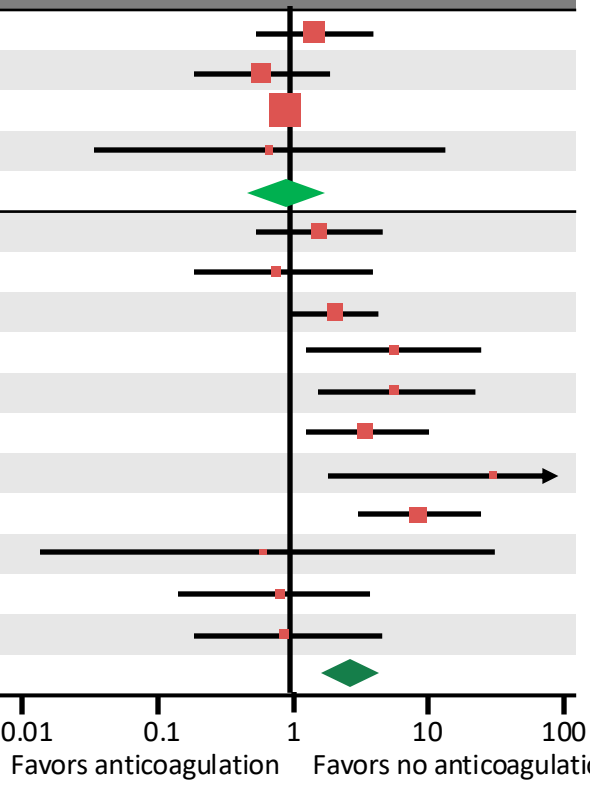
GI, gastrointestinal.

Kraaijpoel N, et al. *Thromb Haemost*. 2018;118:1439–1449.

Intracranial Disease

Statistics for Each Study

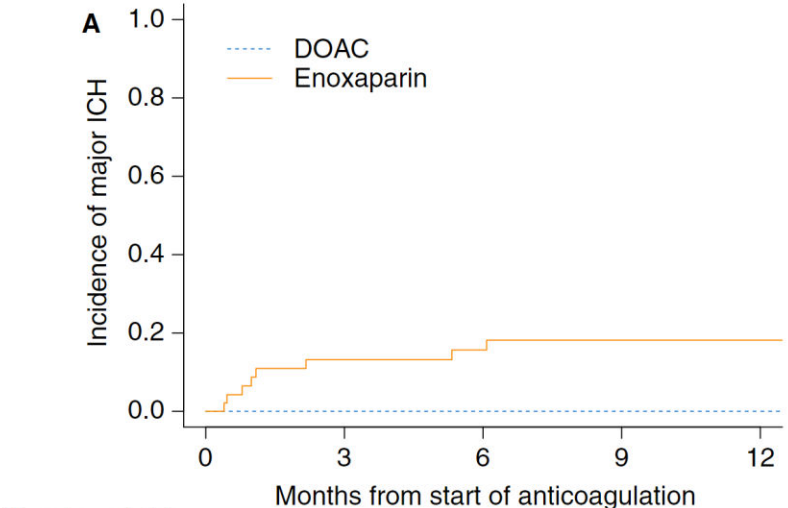
Group by Primary	Study Name	Study Year	Risk Ratio	Lower Limit	Upper Limit	Z-value	*P*-value
Metastases	Burth	2021	1.400	0.488	4.014	0.626	0.531
	Horstman	2018	0.578	0.183	1.820	-0.937	0.349
	Donato	2015	0.837	0.630	1.113	-1.221	0.222
	Alvarado	2012	0.644	0.032	12.815	-0.288	0.773
	Sum of metastases studies		0.863	0.451	1.651	-0. 446	0.656
Primary cancer	Jo	2021	1.583	0.514	4.874	0.801	0.423
	Burth	2021	0.778	0.178	3.402	-0.344	0.739
	Mantia	2017	2.113	1.041	4.286	2.072	0.038
	Al Megren	2017	5.500	1.261	23.986	2.269	0.023
	Khoury	2016	5.876	1.386	24.915	2.403	0.016
	Norden	2011	3.406	1.241	9.351	2.379	0.017
	Pan	2009	32.846	1.749	616.848	2.334	0.020
	Nghiemphu	2008	8.299	2.882	23.896	3.922	0.000
	Choucair	1987	0.636	0.013	30.273	-0.229	0.819
	Ruff	1983	0,720	0.142	3.640	-0.397	0.691
	Ruff	1981	0.880	0.181	4.291	-0.158	0.875
	Sum of primary cancer studies		2.577	1.587	4.186	3.827	0.000



Brain metastatic disease: RR, 0.92 (95% CI, 0.43–1.93)
Primary brain cancer: RR, 2.63 (95% CI, 1.48–4.67)

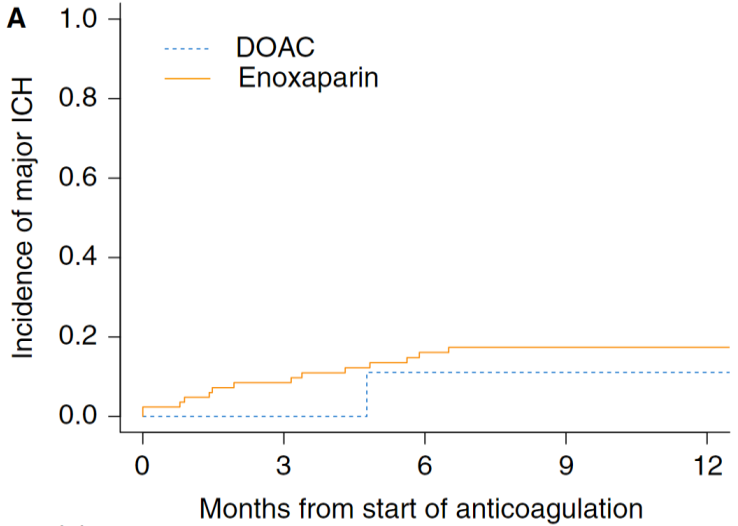
Intracranial Disease

Primary CNS Tumors



Number at risk					
DOAC	20	18	17	16	15
Enoxaparin	47	32	18	14	11

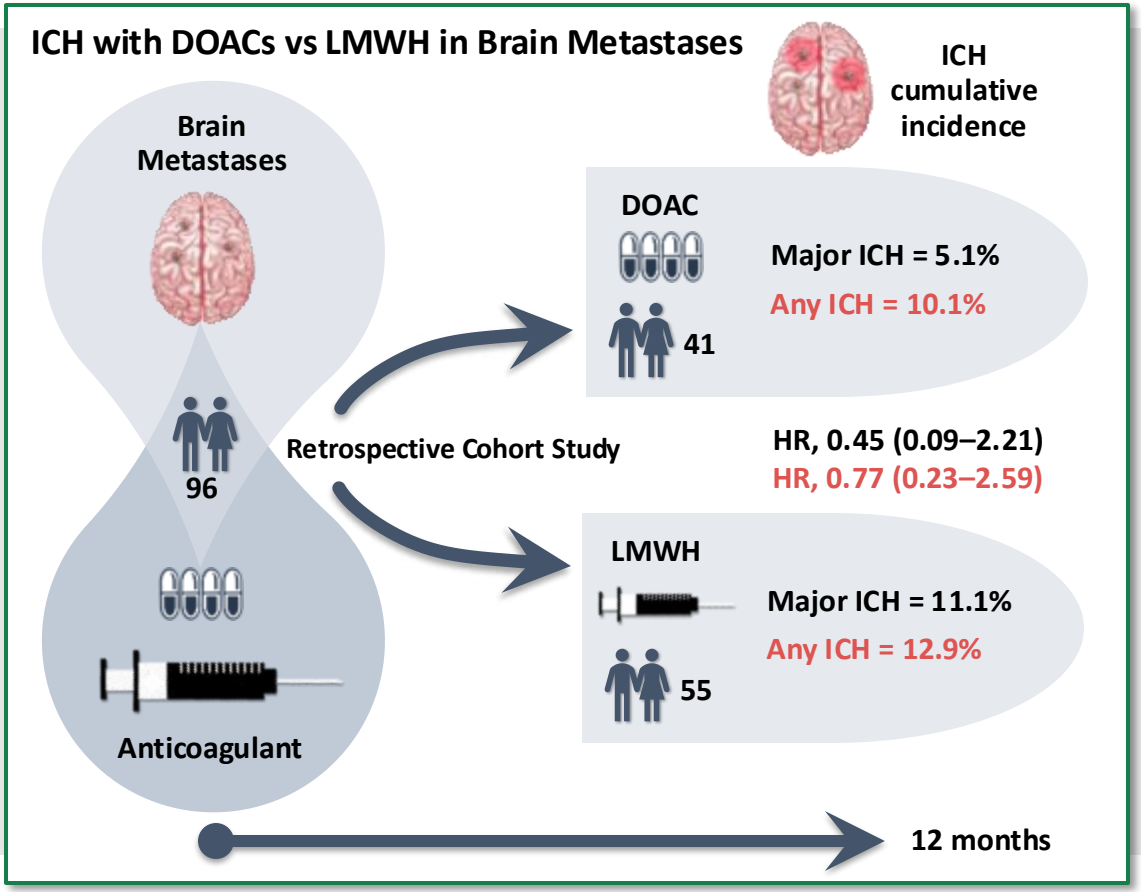
Brain Metastases



Number at risk					
DOAC	21	10	8	8	8
Enoxaparin	84	45	26	19	15

Carney BJ, et al. *J Thromb Haemost.* 2019;17(1):72–76.

Brain Metastases



DOACs are associated with a lower risk of major bleeding than LMWH in patients with primary or metastatic brain cancer

Major ICH was defined as spontaneous, ≥10 mL in volume, symptomatic, or requiring surgical intervention.

ICH, intracranial hemorrhage.

Leader A, et al. *Blood Adv*. 2020;4(24):6291–6297.

Clinically Relevant Drug Interactions

Apixaban/Rivaroxaban

Strong inhibitors of CYP3A4

(e.g., clarithromycin, ketoconazole)

(e.g., phenytoin, rifampicin)

Strong inducers of CYP3A4

All DOACs

Strong inhibitors of P-gp

(e.g., ketoconazole, ritonavir)

(e.g., carbamazepine, rifampin)

Strong inducers of P-gp

Avoid DOACs with strong inhibitors or strong inducers

Drug-Drug Interactions for Patients with Cancer

- TacDOAC: 202 patients on DOAC and targeted anticancer therapy
  - High rate of bleeding complication in patients receiving BTK inhibitors
- Retrospective cohort study of 86 patients on LMWH/DOAC and VEGFR TKI
  - High risk of bleeding in patients on LMWH
  - Inadequate sample size to assess bleeding rate of patients on DOAC
- Post-hoc analysis of the Caravaggio study
  - Concomitant anticancer agents had no effect on the risk of recurrent VTE or bleeding (apixaban or dalteparin)

BTK, Bruton's tyrosine kinase; TacDOAC, targeted anticancer DOAC; TKI, tyrosine kinase inhibitor; VEGFR, vascular endothelial growth factor receptor.

Wang TF, et al. *J Thromb Haemost*. 2021;19(8):2068–2081. Verso M, et al. *Eur J Cancer.* 2021;148:371–381. Patel SH, et al. *Cancer.* 2021;127:938–945.

Drug-Drug Interactions

- Risk of hospitalization with hemorrhage among patients taking clarithromycin or azithromycin and DOACs

30-day Rate of Hemorrhage with Clarithromycin vs Azithromycin among Patients Taking DOACs

Characteristic	No. of Events	Cumulative Incidence, %	HR (95% CI)	
			Unadjusted	Adjusted
Major hemorrhage				
Clarithromycin	51/6,592	0.77	1.81 (1.27–2.57)	1.71 (1.20–2.45)
Azithromycin	79/18,351	0.43		
Any hemorrhage or receipt of pRBC transfusion				
Clarithromycin	109/6,592	1.65	1.53 (1.21–1.93)	1.53 (1.21–1.94)
Azithromycin	199/18,351	1.08		

- Drug-drug interactions were associated with a small but statistically significantly greater 30-day risk of hospital admission with major hemorrhage

HR, hazard ratio; pRBC, packed red blood cells.

Hill K, et al. *JAMA Intern Med.* 2020;180(8):1052–1060.

Drug-Drug Interactions

Rates of Hemorrhage Comparing Use of Tamoxifen and Aromatase Inhibitors in Patients Receiving Concurrent DOACs				
Characteristic	**No./Total No.**	**Cumulative Incidence, %**	**Rate per 1,000 Person-years (95% CI)**	**Weighted HR (95% CI)**
Major hemorrhage				
Tamoxifen	29/1,179	2.5	23.4 (16.3–33.7)	0.68 (0.44–1.06)
Aromatase inhibitors	119/3,574	3.3	31.1 (26.0–37.2)	
Any hemorrhage				
Tamoxifen	58/1,179	4.9	47.7 (36.9–61.8)	1.04 (0.75–1.43)
Aromatase inhibitors	165/3,574	4.6	43.7 (37.5–50.9)	

Summary of Additional Analyses		
	Outcome, Weighted HR (95% CI)	
Additional Analyses	**Major Hemorrhage**	**Any Hemorrhage**
Restricted to those with eGFR measures and added as a covariate	0.67 (0.39–1.16)	1.09 (0 74–1.61)
Limit follow-up to 90 days	0.83 (0.41–1.68)	1.07 (0.62–1.86)
New DOAC users	0.73 (0.42–1.29)	1.09 (0.71–1.66)
Prevalent DOAC	0.63 (0.31–1.29)	1.00 (0.61–1.66)
Duration from cancer diagnosis added as a covariate	0.68 (0.44–1.05)	1.03 (0.75–1.43)
Death as competing risk	0.68 (0.37–1.25)	1.04 (0.66–1.65)

Risk of hospitalization or ER visits with major bleeding among patients taking tamoxifen or an aromatase inhibitor and DOACs (N=4,753)

eGFR, estimated glomerular filtration rate; ER, emergency room.

Wang TF, et al. *JAMA Netw Open*. 2022;5(6):e2219128.

GI Disease or Surgery
Absorption

Edoxaban[1]: tablets disintegrate in the stomach (dependent on an acidic environment), absorption primarily in the proximal small intestine

Rivaroxaban[2]: significantly absorbed through the stomach, reduced absorptive surface area may decrease bioavailability

Apixaban[3]: absorbed throughout GI tract including significant (>50%) absorption in the distal small bowel or ascending colon

[1]FDA-approved drug: edoxaban. Revised August 2019. https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/206316s015lbl.pdf.
[2]FDA-approved drug: rivaroxaban. Revised December 2021. https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/215859s000lbl.pdf.
[3]FDA-approved drug: apixaban. Revised June 2019. https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/202155s021lbl.pdf.

GI, gastrointestinal.

Liver Disease
Clearance

Edoxaban: hepatic clearance 50%

Rivaroxaban: hepatic clearance 65%

Apixaban: hepatic clearance 75%

- Patients with active liver disease were excluded from clinical trials
- Body clearance, plasma protein binding, cytochrome P450 metabolism, biliary clearance affected by liver disease
- Use DOACs with caution in setting of hepatic impairment

Qamar A, et al. *J Am Coll Cardiol*. 2018;71(19):2162–2175.

Patient Perspective

Patient Priorities in Choosing Anticoagulation

1. No interference with cancer treatment
2. Efficacy and safety
3. Route of administration

Noble SI, et al. *Haematologica*. 2015;100:1486–1492.

ASH 2021 Guidelines

Recommendation 20

- For patients with cancer and VTE, the ASH guideline panel *suggests* DOAC (apixaban or rivaroxaban) or LMWH be used for initial treatment of VTE for patients with cancer (conditional recommendation, very low certainty in the evidence of effects ⨁◯◯◯).

Recommendation 23

- For the short-term treatment of VTE (3-6 months) for patients with active cancer, the ASH guideline panel *suggests* DOAC (apixaban, edoxaban, or rivaroxaban) over LMWH (conditional recommendation, low certainty in the evidence of effects ⨁⨁◯◯).

ASH, American Society of Hematology.

Lyman G, et al. *Blood Adv.* 2021;5(4):927–974.

NCCN 2023 Guidelines

- Apixaban, edoxaban, or rivaroxaban preferred for patients without gastric or gastroesophageal lesions
- LMWH preferred for patients with gastric or gastroesophageal lesions

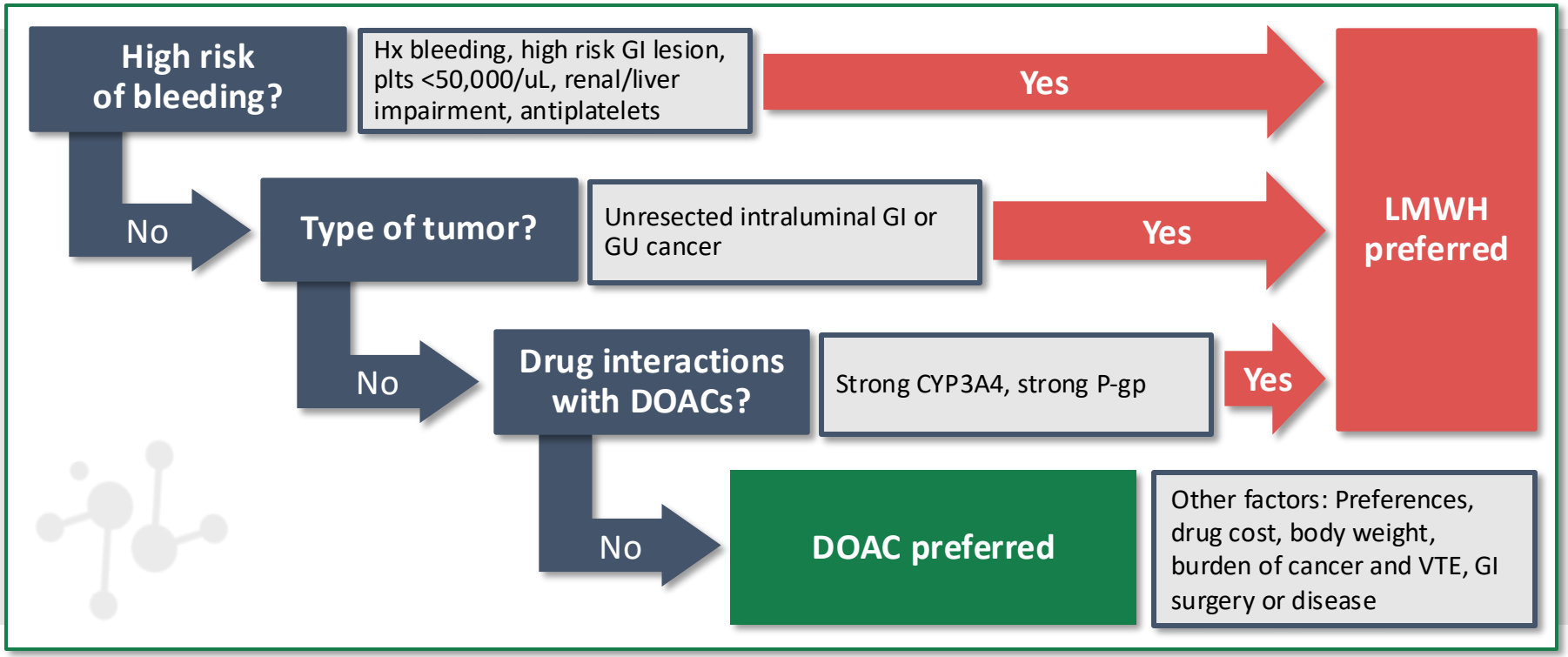
Access a digital HCP point-of-care resource with information about common risk factors, links to the most recent guidelines, and information about how to discuss VTE with patients

Click here

or scan the QR code

NCCN Guideline. Cancer-associated Venous Thromboembolic Disease. v2.2023. https://www.nccn.org/professionals/physician_gls/pdf/vte.pdf.

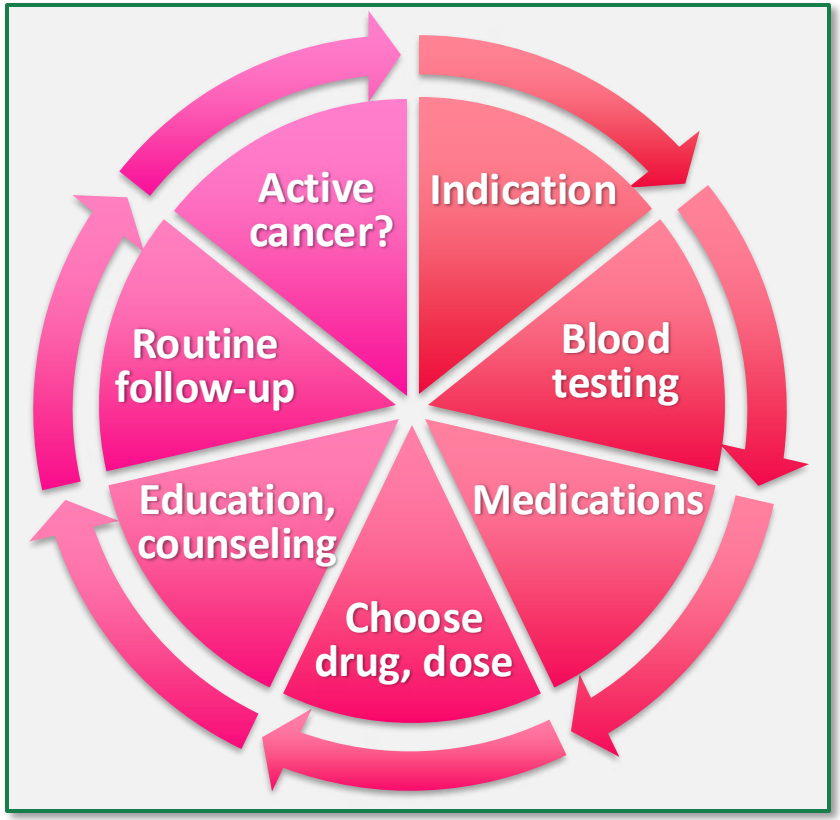
Choosing DOAC or LMWH



GU, genitourinary; Hx, history; plts, platelets.

Adapted from Carrier M, et al. *Curr Oncol*. 2021;28(6):5434–5451.

Approach to Anticoagulant Management



Evaluate and address modifiable bleeding risk factors

Involving Patients in Clot Prevention

- How patients receive education
- Defining clots
- Risks associated with clots
- Cultural background/ language
- Effect of cancer on clots
- Prevention
- Symptoms and signs of VTE and PE
- Differences in treatment options
- Guideline recommendations
- Health literacy
- Patient priorities
- Importance of follow- up care

Patient Case

Mark is a 57-year-old male who was recently diagnosed with metastatic pancreatic cancer.

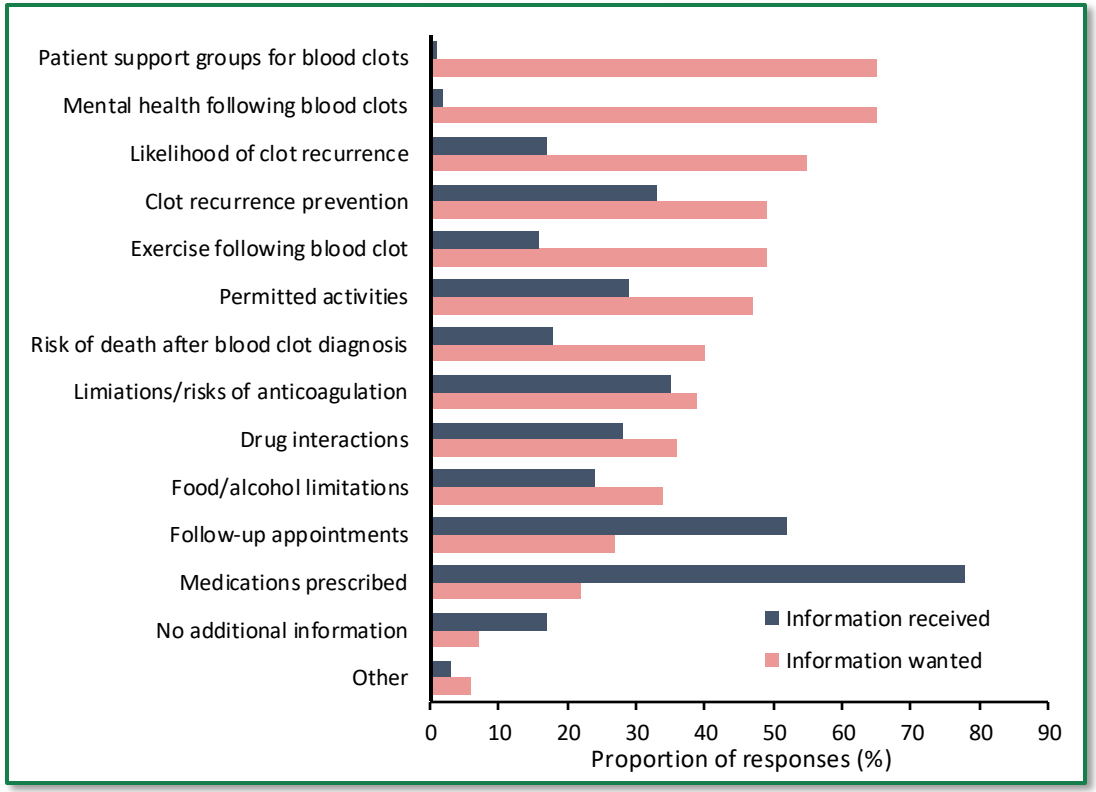
His medical history includes:

- Khorana score = 3 (high risk for VTE)
- No history of bleeding
- Cancer treatment plan: FOLFIRINOX (standard chemotherapy for pancreatic cancer)

VTE prophylaxis plan: apixaban (2.5 mg BID)

Patient Reported Gaps in Blood Clot Education and Support from Clinicians

- 1,050 patients responded to the online survey
- 50% had at ≥3 health care visits before they were correctly diagnosed
- 55% felt their diagnosis was explained to their satisfaction
- 16% of respondents received printed or electronic information on blood clots at the time of diagnosis
- 97% were treated with anticoagulation, but only 48% recall being provided with specific information about the medication, including risks and benefits



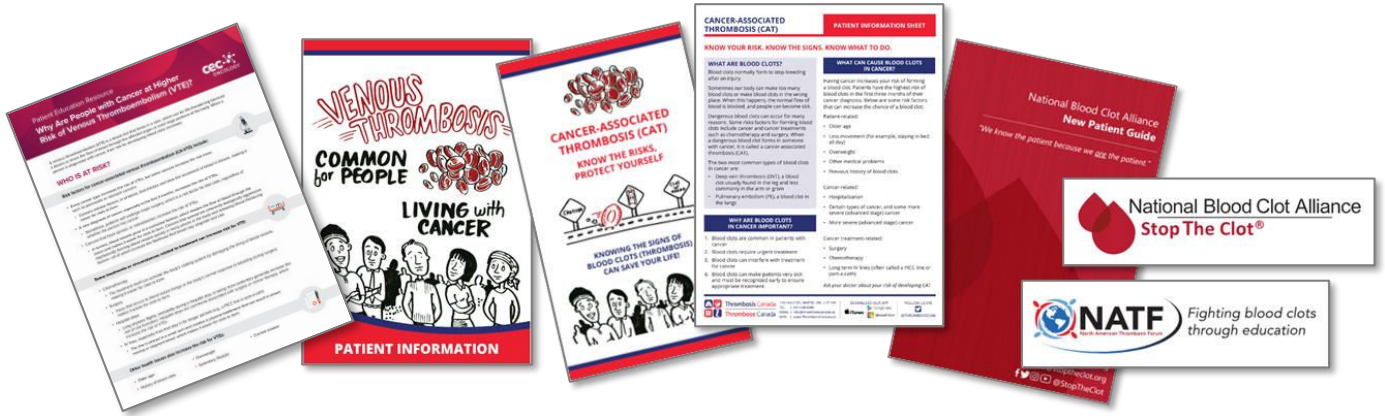
Patell R, et al. *Blood*. 2023;142(Suppl 1):5043.

Patient Resources

Access a digital patient education resource that includes information about risk factors, signs and symptoms, and the importance of adherence to care

Click here

or scan the QR code



VTE Prevention in the Ambulatory Cancer Clinic

High-risk patients are identified using the Khorana and PROTECHT scores via an EHR-based risk assessment tool

Multidisciplinary program implemented by nurses, oncologists, pharmacists, hematologists, and advanced practice providers

Leadership

Institutional Support

Jeffords Institute for Quality and standing multidisciplinary team

Structure

- EHR-based risk assessment tool
- Data capture and electronic reporting methodology
- Formalized communication plan (Thrombosis Action Plan)
- Pharmacy evaluation tool

Clinical Tasks

- Oncology nursing assessment of bleeding and thrombosis risk workflow
- VTE education for all patients (written and verbal)
- Pharmacy evaluation
- Patient meeting with thrombosis specialist: drug and duration of VTE prophylaxis determined

Patient Care

- Personalized risk assessment
- Integrated care
- Inclusion of patient in decision making

Patients with a predicted high risk of VTE during treatment were offered a hematology consultation to consider VTE prophylaxis

Holmes CR, et al. *JCO Oncol Pract.* 2020;16(9):e868–e874.

Summary of CA-VTE Treatment

- DOACs reduce recurrence of VTE compared to LMWH
  - Are equivalent to LMWH in reducing major bleeding
  - Increase risk of clinically-relevant, non-major bleeding compared to LMWH
- DOACs are associated with a lower risk of major bleeding than LMWH in patients with primary or metastatic brain cancer
- Avoid apixaban and rivaroxiban with strong inducers or inhibitors of CYP3A4 and all DOACs with strong inhibitors or strong inducers of Pgp
- DOACs display differing mechanisms of absorption and elimination; must consider patient-specific needs
- An implementation strategy using a multidisciplinary approach can help increase VTE education to patients and optimize the use of primary thromboprophylaxis

SMART Goals
Specific, Measurable, Attainable, Relevant, Timely

Put information into action! Consider the following goals; then *set a time frame* that fits with your work environment and *a reasonable improvement target* that aligns with your patient population.

- Increase the percentage of patients with cancer who are assessed for VTE using a VTE or bleeding risk assessment tool, as documented by inclusion of assessment results in electronic health record (EHR) patient charts.
- Ensure that patients are compliant with prescribed VTE prophylaxis or treatment, as documented by patient-reported behavior and medication receipt in EHR patient charts.
- Increase the percentage of patients with cancer who participate in their therapy decision using shared decision making, as documented by increased delivery of patient education in EHR patient charts.

Resources for this program can be accessed on CEConcepts.com, or by clicking the button or scanning the QR code below.

Click here

or

Claim Credit

Scan the QR code, create an account, complete the pre-evaluation and the post-evaluation, and then claim credit. Thank you for your participation!

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3 Steps to Complete

1. Actively participate in the discussion today by **responding to questions** and/or **asking the faculty questions**
   (MOC credit can be claimed even if a question goes unanswered or an incorrect response is entered)
2. Complete the post-test and evaluation at the conclusion of the webcast
3. Enter your **ABIM ID number** and **DOB** (MM/DD) on the evaluation, so credit can be submitted to ABIM

ABIM CME MOC ACCREDITED

CME for MIPS Improvement Activity

How to Claim This Activity as a CME for MIPS Improvement Activity

- Actively participate today by responding to ARS questions and/or asking the faculty questions
- Complete the post-test and activity evaluation at the link provided
- Over the next 3 months, actively work to incorporate improvements from this presentation into your clinical practice
- In approximately 3 months, complete the follow-up survey from Creative Educational Concepts

CME for MIPS
IMPROVEMENT ACTIVITY

CEC will send you confirmation of your participation to submit to CMS attesting to your completion of a CME for MIPS Improvement Activity.

ONCOLOGY GRAND ROUNDS

CANCER-ASSOCIATED VTE

Balancing Risk and Reward with Modern Anticoagulation

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