Venous Thromboembolism Prophylaxis in Oncology: *Improving Outcomes*

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BACKGROUND

The **risk of venous thromboembolism** (VTE), which includes deep vein thrombosis and pulmonary embolism, in cancer patients is about **2 to 6 times higher** than in the general population. This risk is **multifactorial** and varies with tumour site and type, administered therapy, and patient characteristics such as age, comorbidities, immobility, history of VTE and surgery. [1, 2, 3]

In cancer patients, starting **chemotherapy increases the risk of VTE by a factor of 6.5**, with a significant impact on **quality of life**, **disease prognosis**, and the ability to **adhere to the therapeutic plan**. [3, 4]

To **reduce the incidence** of VTE, it is therefore important to identify a population of cancer patients at higher risk who would benefit from thromboprophylaxis.

As it is the **responsibility of the Hospital Pharmacist**, in coordination with the other members of the multidisciplinary team, to contribute to achieve the **best health outcomes**, particularly regarding the **safety and effectiveness** of cancer treatments, the use of the Khorana Risk Score (KRS) was implemented for all patients with gastric or pancreatic cancer receiving chemotherapy at our institution.

OBJECTIVES

1. **Assessment** and **analysis** by the pharmacist of the **risk of VTE** in patients with gastric or pancreatic cancer using the predictive Khorana model.
2. **Optimization of prophylactic therapy** for VTE in cancer patients at **very high risk**.

METHODS

Patients with gastric or pancreatic cancer, under chemotherapy
From Feb 2022 to Aug 2024
→ **Record and analysis of VTE risk,**
assessed by the Khorana predictive model
→ **Assessment of patients with Khorana risk score ≥ 3**
→ **Analysis of patients with indication for thromboprophylaxis**
→ **Contact with the attending physician to start therapy**
If no clinical contraindication

The Khorana Risk Score is a risk stratification tool recommended in the guidelines of the American Society of Clinical Oncology and the National Comprehensive Cancer Network to select cancer patients with an indication for thromboprophylaxis. It assigns five clinical and laboratory parameters before chemotherapy: A total score of 0 points classifies patients as low risk for VTE, 1 or 2 points as intermediate risk, and those with 3 or more points as high risk. [5,6,7]

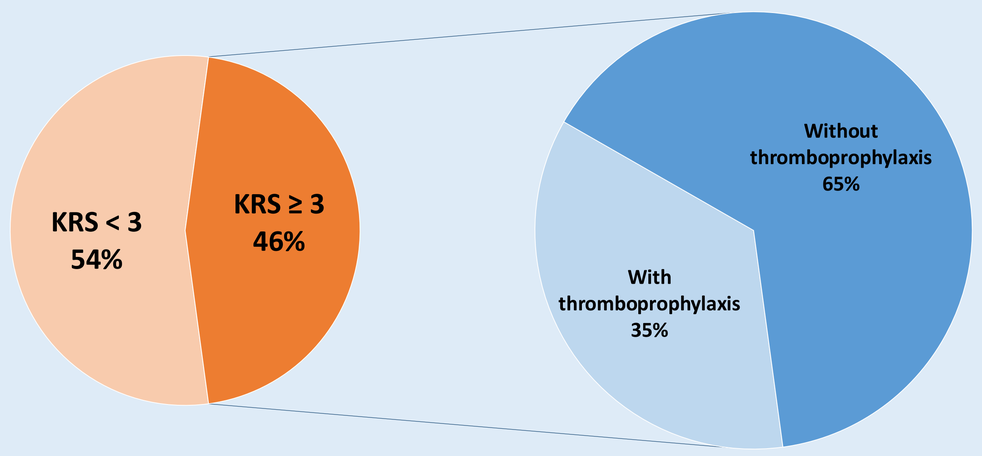
RESULTS

A total of **105 patients** were included: 64 men and 41 women, with a mean age of 68 years. Regarding tumour site, 76 had gastric cancer and 29 pancreatic cancer. Of the 105 patients included, **48 had a KRS ≥ 3**, and only 17 of these were receiving prophylactic anticoagulant therapy or had no indication due to other comorbidities. A total of **27 pharmaceutical interventions** were performed with a proposal to initiate thromboprophylaxis.

Pre-chemotherapy clinical and laboratory parameters	Points
Primary tumour site:	
• Stomach and pancreas	2
• Lung, lymphoma, gynaecological, kidney, and testicular	1
Platelet count ≥ 350×10^9/L	1
Haemoglobin concentration < 10 g/dL or use of erythropoiesis-stimulating agents	1
Leukocyte count ≥ 11×10^9/L	1
Body mass index ≥ 35 kg/m²	1

Risk category	Score	Risk of symptomatic VTE
High risk	≥ 3	7.1 – 17.7%
Intermediate risk	1 - 2	1.8 – 4.8 %
Low risk	0	0.8 – 1.5 %

Risk of VTE and thromboprophylaxis.



CONCLUSIONS

It is **recommended to assess VTE risk** in all cancer patients before starting treatment and periodically throughout its course. The therapeutic criteria for initiating VTE prophylaxis and its duration in cancer patients is not consensual, although most **guidelines recommend prophylaxis in patients with previous VTE or KRS ≥ 3**. This decision should be individualized and shared with the patient, weighing thrombotic and bleeding risk. The model used **shows some limitations**, namely a **low positive predictive value**. Although new models, such as the ONKOTEV model, are being developed, only the Khorana model has been **independently validated**.

Patient education on the signs and symptoms of VTE is also essential for early diagnosis and initiation of appropriate treatment, since **80% of VTE episodes occur in outpatients**.

This **risk assessment led to pharmaceutical interventions** with a **positive impact** on patient **safety and prognosis**. It is important to raise awareness among the entire multidisciplinary team about this issue and to **implement structured and uniform documentation** of risk assessment in the institution, as well as justification for any decision not to initiate prophylaxis, **promoting a culture of patient safety**.

This study, enhances the importance of the hospital pharmacist regarding a continuum of care in cancer patients and its role in the multidisciplinary team.

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