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Primary Venous Thromboprophylaxis in Pediatric Oncology Patients

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Venous Thromboembolism Prophylaxis in High-Risk Pediatric Oncology Patients

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Background

- Prevalence of venous thromboembolism (VTE) in pediatric oncology patients is 7.9%
- No current VTE prophylaxis protocol in place at Children's Mercy or the Children's Oncology Group (COG)
- High-risk criteria for development of venous thromboembolism in cancer patients:
 - Age >12
 - Obesity (BMI >90 %ile)
 - Intra-thoracic malignancy
 - Central venous catheter presence
 - Central venous catheter dysfunction
 - Received asparaginase as chemotherapy
 - Received steroids as chemotherapy
 - Personal history of thrombosis or thrombophilia
 - Relapsed or recurrent malignancy

References: 1) Key N, Khorana A, Kuderer N, et al. Venous thromboembolism prophylaxis and treatment in patients with cancer: ASCO clinical practice guideline update. *J Clin Oncology*. 2019;38(5):496-520. 2) Athale U, Cox S, Thabane L, et al. Epidemiology and clinical risk factors predisposing to thromboembolism in children with cancer. *Pediatr Blood and Cancer*. 2008;51:792-797. 3) Piovesan D, Attard C, Monagel P, Ignjatovic V. Epidemiology of venous thrombosis in children with cancer. *Thromb Haemost*. 2014;111:1015-1021. 4) Bell AD, Hockenberry M, Landier W, Ewing N. Venous Thromboembolism Risk Assessment and Prophylaxis Use in Pediatric, Adolescent, and Young Adult Hematology Oncology Patients. *J Pediatr Hematol Oncol*. 2015;37(6):455-458. doi:10.1097/MPH.0000000000000384

Methods

- Retrospective chart review
- Inclusion criteria
 - Diagnosis Jan 1, 2014 to Dec 31, 2018
 - One or more high risk criteria
- Exclusion criteria
 - Treatment or period at another facility
- Followed patients through treatment completion or death (typically 2-5 years)
- Reviewed about 1000 charts

Outcomes

- Primary Outcomes
 - Evaluate the relative incidence of VTE in pediatric oncology patients at our facility
 - Evaluate the use of pharmacologic prophylaxis in patients with risk factors for VTE at our facility
- Secondary Outcomes
 - Evaluate the incidence of bleeding and platelet transfusions in patients on pharmacologic prophylaxis
 - Create a protocol for VTE prophylaxis at Children's Mercy

Results

- 10.5% (37/350) of patients reviewed developed some form of venous thromboembolism
- 2.5% (9/350) of patients were placed on VTE prophylaxis (enoxaparin)
- None of the patients placed on prophylaxis developed VTE

