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ORAL ABSTRACTS

332.THROMBOSIS AND ANTICOAGULATION: CLINICAL AND EPIDEMIOLOGICAL

Multicenter Study of a Risk Prediction Model for Critically Ill Children at High-Risk for Hospital-Acquired Venous Thromboembolism: Findings from the Children's Hospital-Acquired Thrombosis (CHAT) Consortium

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Introduction: Critically ill children are at high-risk of developing a hospital-acquired venous thromboembolism (HA-VTE) as well as being at an increased risk for bleeding. To better understand which subset of children may benefit from thromboprophylaxis measures, (without contraindications for potential associated hemorrhagic complications), the Children's Hospital Acquired Thrombosis (CHAT) Consortium previously derived a HA-VTE risk assessment model (RAM) for critically ill children from 8 centers. This RAM included five variables: (1) immobility defined using a Braden score $\leq$2, (2) length of hospitalization prior to PICU admission, (3) central venous catheterization, (4) presence of congenital heart disease (CHD) and (5) history of autoimmune/inflammatory disorder or infection. For this study we aimed to externally evaluate our previous HA-VTE RAM in critically ill children in an independent cohort via the CHAT Consortium.
Methods: Critically ill children aged 0-21 years admitted or transferred into a pediatric intensive care unit (PICU) at 32 U.S. centers were randomly selected to be enrolled in the study. Participants with a HA-VTE at admission or cardiac surgery within 2 weeks of PICU admission/transfer were excluded. Participants were prospectively followed via chart review for the development of a HA-VTE throughout their hospitalization and up to 30 days post discharge. Twenty-one variables that had been evaluated in univariate analyses from the previously-reported ICU-RAM derivation study were again analyzed in the present prospective cohort via univariate logistic regression. Variables with *P*-value of <0.1 were included in a multivariable logistic regression model, with *P*-values of <0.05 considered significant. Missing values were not imputed and complete case analysis was utilized.
Results: From January 2020 to July 2022, 4,504 participants were enrolled and 93 developed a HA-VTE (2.1%). Complete data were available for 65 HA-VTE cases and 3056 controls without HA-VTE. Median age for HA-VTE participants was 5.2 years (interquartile range [IQR] 1.0-15.2) compared to 6.6 years (IQR 1.7-13.8) for those without HA-VTE; 55% and 53% of each group, respectively, were males. Among seven variables that met criteria for evaluation in the updated multivariable model, central venous catheter (odds ratio [OR] 4.2, 95% confidence interval [CI] 2.4-7.4), cancer (OR 3.1, 95% CI 1.4-6.7), immobility (OR 2.0, 95% CI 1.2-3.4, prior hospitalization (OR 2.0, 95% CI 1.1-3.5) and mechanical ventilation (OR 1.9, 95% CI 1.1-3.4) were each independently associated with HA-VTE risk (Table 1). The validation RAM had an area under the receiver operating characteristic curve of 0.81 (95% CI, 0.75-0.86) (Figure 1), compared to 0.78 (95% CI=0.73-0.84) for the previous model.
Conclusions: The present work represents the largest external validation study of a HA-VTE RAM to date in critically ill children. We identified five independent risk factors for HA-VTE for children admitted to a PICU. Two of these factors were identified in the derivation study RAM, while three (cancer, prior hospitalization, and mechanical ventilation) were newly identified via this validation study.

Disclosures Jaffray: *Hema Biologics:* Consultancy; *Behringer-Ingelheim:* Other: Consortium lead to run their observational drug study; *Daiichi Sankyo:* Consultancy; *Bayer:* Consultancy; *Genetech:* Consultancy; *Octapharma:* Consultancy. **Branchford:** *Kendrion:* Other: Industry initiated study member; *Novo Nordisk:* Membership on an entity's Board of Directors or advisory committees; *Sana Biologics:* Other: Contract Laboratory work. **Faustino:** *Diagnostica Stago:* Other: Equipment loan and reagents; *Grifols:* Research Funding. **Young:** *Sanofi Genzyme:* Consultancy, Speakers Bureau; *Genentech/Roche:* Consultancy; *Hema Biologics:* Speakers Bureau; *Hema Biologics/LFB:* Consultancy; *CSL Behring:* Consultancy, Speakers Bureau; *Spark:* Consultancy, Speakers Bureau; *Takeda:* Consultancy, Research Funding; *Viatris:* Patents & Royalties; *Genentech, Inc.:* Research Funding; *Novo Nordisk:* Consultancy. **Goldenberg:** *Bayer:* Consultancy; *Boehringer-Ingelheim:* Consultancy; *Chiesi:* Consultancy; *Astra Zeneca:* Consultancy; *Daiichi Sankyo:* Consultancy; *University of Colorado-affiliated Academic Research Organization CPC Clinical Research:* Other: Serves on clinical trials oversite committees for pharma studies; *Novartis:* Other: Data and Safety Monitoring Committee; *Anthos Therapeutics:* Consultancy.

Table 1. Findings of univariate analysis of variables that met criteria for inclusion in multivariable logistic regression.

Variable	Odds Ratio (95% CI)	P-value
Completely limited/very limited mobility within 24 hours of admission / transfer to PICU*	1.99 (1.16-3.44)	**0.013**
Past medical history of cancer	3.09 (1.42-6.72)	**0.004**
Past medical history autoimmune/ inflammatory disorder or current infection	1.34 (0.74-2.45)	0.339
Other high risk past medical history**	2.65 (0.84-8.43)	0.098
Hospitalization up to 30 days prior to this hospitalization	1.99 (1.14-3.47)	**0.016**
Mechanical ventilation within 24 hours of PICU admission	1.91 (1.07-3.40)	**0.028**
Central venous catheter placed within 30 days prior to or within 24 hours of PICU admission	4.19 (2.38-7.38)	**<.001**

*Based on Braden scores
**Blood-related disorder, protein-losing state, total parental nutrition dependence, thrombophilia/history of VTE

Figure 1. Area under the receive operating characteristic for the ICU-RAM.

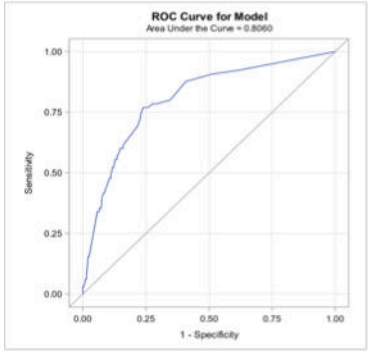

Figure 1

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