

Editorial

Bleeding assessment tools for bleeding disorders

Patcharee Komvilaisak

Department of Pediatrics, Faculty of Medicine, Khon Kaen University

The quantitative bleeding assessment has been utilized to screen for bleeding manifestations, helping distinguish patients with hemostatic disorders from those without and reducing unnecessary laboratory testing. Bleeding assessment tools have been validated and are increasingly used in clinical and research settings in recent years.

The ISTH-BAT was developed for use in both children and adults, assessing 13 bleeding symptoms and scoring each from -1 to 4¹⁻³. Pediatric-specific bleeding symptoms, such as postcircumcision bleeding, umbilical stump bleeding, cephalohematoma, macroscopic hematuria, postvenipuncture bleeding, and conjunctival hemorrhage, are included as additional symptoms in the Pediatric Bleeding Questionnaire. A score (BS) ≥ 4 in adult males, ≥ 6 in adult females, and ≥ 3 in children is considered abnormal⁴. Higher scores are useful for guiding the assessments of bleeding severity. The patterns and types of bleeding symptoms provide important information for differentiating between primary and secondary hemostatic disorders. However, the ISTH-BAT tool has some limitations, particularly in its preoperative assessment of patients⁵, its ability to address mild bleeding severity, its capacity to predict future bleeding events, and its utility in counsel patients on their outcomes⁶. These limitations hinder its effectiveness in classifying patients with or without hemostatic abnormalities.

Pakdeeto S, et al.,⁷ developed a Thai version of the ISTH-BAT (Thai Pediatric-BAT), which was certified by a professional English-Thai translator and subsequently validated for use in a mobile application. Pakdeeto S, et al., utilized the Thai Pediatric-BAT to assess patients with bleeding disorders, reporting a bleeding score greater than 3 in 100% of patients with von Willebrand disease, 78.9% of those with platelet disorders, 71.4% with mild hemophilia A, and 100% with other bleeding disorders, including factor V and factor VII deficiencies.

The self-administered BAT has been used as a screening tool for patients with bleeding symptoms in outpatient clinics, aiding in the diagnosis of pediatric bleeding disorders such as von Willebrand disease. An electronic self-administered bleeding assessment tool (E-Self BAT)⁸ has now been developed for screening pediatric bleeding disorders in hematology clinics. This tool has been optimized to save time in the outpatient setting.

Reference

1. Rodeghiero F, Castaman G, Tosetto A, Batlle J, Baudo F, Cappelletti A, et al. The discriminant power of bleeding history for the diagnosis of type 1 von Willebrand disease: an international, multicenter study. *J Thromb Haemost.* 2005;3:2619-26.
2. Tosetto A, Rodeghiero F, Castaman G, Goodeve A, Federici AB, Batlle J, et al. A quantitative analysis of bleeding symptoms in type 1 von Willebrand disease: results from a multicenter European study (MCMDM-1 VWD). *J Thromb Haemost.* 2006;4:766-73.
3. Bowman M, Riddell J, Rand ML, Tosetto A, Silva M, James PD. Evaluation of the diagnostic utility for von Willebrand disease of a pediatric bleeding questionnaire. *J Thromb Haemost.* 2009;7:1418-21.
4. Elbatarny M, Mollah S, Grabell J, Bae S, Deforest M, Tuttle A, et al. Normal range of bleeding scores for the ISTH-BAT: adult and pediatric data from the merging project. *Haemophilia.* 2014;20:831-5.
5. Vries MJ, van der Meijden PE, Kuiper GJ, Nelemans PJ, Wetzels RJ, van Oerle RG, et al. Preoperative screening for bleeding disorders: a comprehensive laboratory assessment of clinical practice. *Res Pract Thromb Haemost.* 2018;2:767-77.
6. Fasulo MR, Biguzzi E, Abbattista M, Stufano F, Pagliari MT, Mancini I, et al. The ISTH Bleeding Assessment Tool and the risk of future bleeding. *J Thromb Haemost.* 2018;16:125-30.
7. Pakdeeto S, Natesirinilkul R, Komwilaisak P, Rand ML, Blanchette VS, Vallibhakara SA, et al. Development of a Thai version of the paediatric bleeding assessment tool (Thai paediatric-BAT) suitable for use in children with inherited mucocutaneous bleeding disorders. *Haemophilia.* 2017;23:e539-e42.
8. Sharma R, Flood V, Jobe S, Punzalan R, Simpson P, Conway C, et al. Utilization and optimization of an electronic self-administered bleeding assessment tool (E-Self BAT) for the screening of pediatric bleeding disorders in the hematology clinic. *Haemophilia.* 2023;29:685-8.

