Software for assessment of bleeding risk scores in atrial fibrillation

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KEYWORDS: atrial fibrillation, anticoagulants, software, risk, bleeding.

CITATION: Cardiol Croat. 2018;13(11-12):457. | https://doi.org/10.15836/ccar2018.457

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Introduction: Several bleeding risk scores are developed for estimating bleeding risk in patients with atrial fibrillation (AF)[1-3]. These include: HAS-BLED (hypertension, abnormal renal/liver function, stroke, bleeding history or predisposition, labile INR, elderly (>65 years), drugs/alcohol concomitantly), ORBIT (older age, reduced hemoglobin/ hematocrit/anemia, bleeding history, insufficient kidney function, treatment with anti-platelets), ABC (age, biomarkers, clinical history), ATRIA (anemia, severe renal disease, age ≥ 75 years, previous hemorrhage, and diagnosed hypertension) and HEMORR$_2$HAGES (Hepatic or Renal Disease, Ethanol Abuse, Malignancy, Older Age, Reduced Platelet Count or Function, Re-Bleeding, Hypertension, Anemia, Genetic Factors, Excessive Fall Risk and Stroke)[1-3]. The use of oral anticoagulants is still a standard in stroke prevention in AF but should be balanced against associated bleeding risk[2]. Aim: Development of software solution that will enable a quick assessment of bleeding risk in patients with AF to the clinician in order to optimize anticoagulation therapy in patients with AF (especially in patients who use vitamin K antagonists in therapy).

Material and Methods: The software was developed in the form of a web application. Responsive design of the interface was key to optimal user interaction, rendering seamless control of every step of the process regardless of the type of device used, whether it is a laptop or a smartphone. For development, a Python based web framework named Flask was used. It is considered to be a good choice for rapid prototyping and developing and deploying small to medium sized applications.

Results: The process is separated into three steps. First step displayed prompts the user to select the type of score they wish to be calculated. Following step includes entering anamnestic data, laboratory findings, symptoms and comorbidities. Final screen displays the calculated score which assists to user to determine the course of the treatment.

Conclusion: The software solution enables a faster and easier assessment of bleeding risk in patients with AF, which leads to a better therapeutic modality. The easy availability of software solutions, as well as the use in offline mode, make it easy to access and distribute it.

RECEIVED:
October 25, 2018

ACCEPTED:
November 5, 2018

LITERATURE

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