A new clinical decision support tool based on personalized evidence-based medicine improves outcomes of anticoagulation therapy in patients with atrial fibrillation: an analysis from the AF registry

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Background: New clinical decision support system (CDSS) MedicBK use algorithms for presents treatment suggestions in frame of guideline-based therapy and personalized evidence-based medicine (EBM) therapy.

Objective: We hypothesized that clinicians with access to CDSS (MedicBK) would provide more personalized EBM anticoagulation treatment and improve outcomes.

Methods: 2683 patients at high risk for stroke and 1-year follow-up were enrolled in study and analyzed by CDSS and core laboratory. The primary endpoint was the quantify the performance of the CDSS (MedicBK) algorithm. Secondary endpoints include the following: outcomes for all-cause mortality, thromboembolism (TE), bleeding, and the composite endpoints.

Results: From 2683 patients, 1971 patients were core laboratory-classified as guideline adherent and 824 of them were personalized evidence-based therapy adherent. All 1971 (100%) patients were also detected as guideline adherent by CDSS, whereas only 748 (90.8%) were classified as personalized EBM adherent. The sensitivity for identifying patients with guideline and personalized EBM therapy adherence is therefore 100% and 90.8%. 712 and 1935 patients classified as guideline and personalized EBM therapy non-adherent by the core laboratory. All of them CDSS confirmed the absence of adherence, resulting in a specificity of 100%. The PPV and NPV of detecting with or without adherence to guideline, respectively, are 100% (1971 of 1971 pts) and 100% (712 of 712 pts). The PPV and NPV of detecting personalized EBM therapy adherence or non-adherence, respectively, are 100% (748 of 748 pts) and 96.1% (1859 of 1935 pts).

The composite endpoint of cardiovascular death, any thromboembolism (TE) or bleeding was significantly lower in personalized EBM adherent patients during 1-year follow-up (P=0.02) and increased risk by >40% [HR 1.454 (95% CI 1.037; 2.040)], and non-guideline adherent and non-personalized EBM adherent treatment by >110% [HR 2.113 (95% CI 1.453; 3.074)].

Conclusion: MedicBK appears to be promising to improve adherence to guideline and personalized EBM therapy in general practice. Personalized EBM anticoagulation management is associated with significantly better outcomes.