

# Seasonal variation in the effectiveness of anticoagulation therapy of adults with atrial fibrillation: is the international normalized ratio value higher in summer time?

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**Introduction:** The effectiveness and safety of treatment with warfarin are critically dependent on maintaining the international normalized ratio (INR) in the therapeutic range. Besides the dose of warfarin, many factors which interact with the metabolism of warfarin may influence the stability of treatment and the time in which patients' INRs are in the therapeutic range.<sup>1,2</sup> Aim: To establish whether there is a significant seasonal variation in effectiveness of warfarin therapy in adults with atrial fibrillation in a Croatian population.

**Patients and Methods:** We conducted an observational study of a subgroup of patients enrolled in the AMACADO - Atrial fibrillation associated thromboembolic risk Management in Croatia national Database project, involving 2326 electronic medical records of patients with AF hospitalized in UHC Zagreb from 2010 until 2015. Out of 2326 patients we selected 1110 that were treated with warfarin as permanent anticoagulant therapy, prior to hospitalization, and the rest of patients we excluded from the research. Patient were divided in two categories based on INR values higher than 2.0 (INR > 2.0) and less or equal than 2.0 (INR ≤ 2.0). Furthermore, we analyzed seasonal variation in the INR value during four seasons: spring, summer, autumn and winter. The  $\chi^2$  test was used for comparison of categorical variables.

**Results:** Out of 239 patients admitted to hospital during summer 111 had an INR value > 2.0, (46.4%) in comparison with patients admitted during all other seasons (spring, autumn and winter) (324/871, 37.2%). Our results show that a larger proportion of patients was effectively anticoagulated during summer vs. other seasons ( $p=0.00950174$ , CI 95%).

**Conclusion:** A seasonal variation in the INR values was observed among adults with atrial fibrillation, possibly due to many different factors such as variations in diet, hydration status and physical activity, and possibly therapy guidance. Seasonal variations in the intensity of warfarin therapy should always be considered in trials exploring thromboembolic complications of atrial fibrillation. The causes of this variations should be further investigated.

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## LITERATURE

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