DAWN® AC
ANTICOAGULATION SOFTWARE

Can We Improve Monitoring of INR with Variance Growth Rate?

Jane Skov, Clinical Researcher, South Western Hospital, Denmark (on behalf of the EAA Organisation: Leon Poller, Saied Ibrahim and Jørgen Jespersen)

Jane's presentation was based around whether we can improve the monitoring of INR and began with a brief historical background, including the standardisation of prothrombin time in 1962 and the WHO standardisation scheme in 1983.

The quality of anticoagulation treatment can be measured using the following methods:

- Rate of clinical events
- Number of INRs in range
- Percentage of INRs in range
- Time in therapeutic range (TTR) by linear interpolation

Referring to a previous EAA study on computer-assisted dosing using the DAWN AC system which looked at the % Time in Therapeutic Range (TTR) and clinical events of a patient population dosed using manual dosing versus computer-assisted, Jane highlighted that whilst high quality anticoagulation treatment is provided by clinics (TTR >%70), around half of all clinical events occur when the patient's INR is within their therapeutic range. Therefore, although TTR is often considered the 'gold standard', it is NOT a dependable predictor of clinical events, particularly bleeding.

So, returning to the title of the presentation, is there room for improvement?

In an attempt to answer this question, Jane referred to a recent paper (The clinical evaluation of International Normalised Ratio variability and control in conventional oral anticoagulant administration by use of the variance growth rate. S Ibrahim, J Jespersen, L Poller. Journal of Thrombosis and Haemostasis 11: 1540-1545 2013) which considered a measure called Variance Growth Rate (VGR) which looks at the variability between a patient's INR values to determine how stable they are.

The paper concluded that 'INR monitoring with a measure such as the VGR on a shorter-term basis and %TTR (i.e. 3 or 6 months before the current INR measurement) may offer additional safety by detecting and isolating patients who may be at increased risk of possible adverse episodes'.

In conclusion:

- " …the predictive ability of the VGR methods was shown to be as effective as that of the typically reported percentage TIR, especially for INR monitoring in the short term"

- "It is recommended that at least two outcome measures should be reported that assess INR and dose determination"

A VGR calculator has been incorporated into the later versions of DAWN AC.