

A study to evaluate patients' anticoagulation stability in three different monitoring settings in Newcastle upon Tyne

S Abohelaika¹, F Kamali¹, H Wynne^{0,2}. ¹Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, UK, ²Care of the Elderly, Freeman Hospital, Newcastle upon Tyne, UK

Introduction/Background:

Maintenance of anticoagulation within target therapeutic range is essential for patients taking warfarin to optimise benefit. Anticoagulant monitoring in Newcastle upon Tyne is provided as a unified service which offers a choice of attending for testing in hospital or general practice and a domiciliary based service for housebound patients. Dependency and reduced time of INR in the therapeutic range (TTR) increases risk of warfarin related bleeding. It has been suggested that novel oral anticoagulants, which do not require INR monitoring, may be more cost effective in housebound patients and in those whose TTR with warfarin is poor.

Aims:

To examine anticoagulation stability in domiciliary monitored (and therefore dependent) patients and those monitored in either hospital or general practice.

Methods: 326 atrial fibrillation patients taking warfarin, aged 75 years and above, were selected randomly from those attending the hospital (n=100), general practice (n=122), and domiciliary (n=104) monitoring service. INR values were collected retrospectively for 12 months (January to December 2011) for each patient, dose changes and number of visits were recorded, and TTR calculated.

Results: 189 (58%) women with a mean \pm SD age of 83.5 \pm 4.8 and 137 (42%) men with mean \pm SD age 81.7 \pm 4.2 were studied. The mean ages for hospital, general practice, and domiciliary based patients were 82.5 \pm 4.5, 81.7 \pm 4.1 and 84.2 \pm 5.1 respectively. The domiciliary patients group was significantly older ($F_{(2,323)}=8.61$, $P<0.0001$) and with a significantly larger proportion of females 77(74%) ($\chi^2(df=2)=17.65$, $P<0.001$) than the other two groups. Mean \pm SD TTR in hospital monitored was 79% \pm 14.7%, 72% \pm 17.4% in general practice monitored patients, and 68% \pm 17.0% in domiciliary monitored patients. TTR means were significantly different ($F_{(2,323)}=11.62$, $P<0.0001$) among the three groups (one way ANOVA). Patients whose anticoagulation was managed by hospital clinics had a significantly higher TTR compared with both domiciliary and general practice groups (Tukey's HSD test). The square roots for the number of INR monitoring and number of dose changes were used to normalize the skewness of the data. The back-transformed mean number of INR monitoring events and dose changes were (12.7, 11.3, 14.0) and (2.2, 2.0, 3.2) in the twelve months for the hospital, general practice and domiciliary monitored patients respectively; the number of INR monitoring events ($F_{(2,323)}=10.50$, $P<0.0001$), and numbers of dose changes ($F_{(2,323)}=4.60$, $P=0.004$) were significantly different among the three groups (one way ANOVA). Both hospital and domiciliary monitored based groups had significantly higher mean number of INR monitoring events than general practice based groups, and that the domiciliary monitored based group had significantly higher mean number of dose changes than the other two groups (Tukey's HSD test). There was no effect of sex or age on TTR, number of INR measurements or dose changes.

Conclusion: Despite more frequent INR monitoring and dose changing, domiciliary patients had the least stable control of anticoagulation. Further exploration of the role of novel anticoagulants for these patients is supported, balancing potential benefit against lack of long term safety data, contraindications, adverse effects, lack of a direct antidote and cost.