

## **Formulary Guidance: Therapeutic drug levels (anti Xa monitoring)**

In contrast to warfarin, continual monitoring of the anticoagulant effect of DOACs is not required. The EHRA Practical Guide on the Use of DOACs in AF states:

The use of DOAC in daily clinical practice does not require monitoring of coagulation since all four phase III RCTs comparing DOACs to VKAs have been conducted without dose adjustments based on plasma level measurements.

However, assessment of the anticoagulant effect of DOACs may be desirable in certain, rare situations. Examples include: a) when reassurance of efficacy/toxicity is needed e.g. in extremes of body weight, b) where renal function is borderline for the dose prescribed, or c) where interacting agents may cause a reduced efficacy or increased risk of bleeding.

Anti-Xa levels should be monitored in accordance with local guidance and it is essential to take the levels at appropriate times in order to interpret the results in relation to drug administration and document both of these times on the request form.

Peak DOAC-specific anti Xa assays can be used to establish that the current DOAC dosing is appropriate. If the peak levels are too low or too high, switching to a higher or lower licenced dose, respectively, if possible, should be tried in the first instance. If repeat Xa levels on the new dose (after allowing at least 3 days to achieve steady state) are still out of range, consider an alternative DOAC or Warfarin.

For example, a 79 year old man, weighing 62kg, with a serum creatinine of 120micromol/l (calculated CrCl = 39ml/min) should be on Apixaban 5mg bd as per the BNF. If his peak Apixaban specific anti Xa levels are 400ng/ml (above the reference range of 60 to 320ng/ml), 2.5mg twice daily could be tried. Do not use unlicensed doses (such as Apixaban 1.25mg twice daily or once daily dosing for this drug).

Expected Peak Concentrations:

Drug	Once Daily (OD) Range	Twice Daily (BD) Range
LMWH (e.g. Dalteparin)	1.0 – 2.0 units/ml	0.5 – 1.0 units/ml
Apixaban		60 – 320 ng/mL
Rivaroxaban	180 – 420 ng/mL	
Edoxaban	120 – 320 ng/ml	

Samples for measuring peak DOAC levels should be taken 3 hours after last dose (4 hours after the last dose for LMWH).

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