Non-vitamin K antagonist (NOAC) monitoring guide

Prescribing Support Bitesize

Quick guide (for full information see below)

Adherence	Ideally 3 monthly (otherwise 6 monthly)
Bleed risk	Ideally 3 monthly (otherwise 6 monthly)
Liver function tests	Annually
Full blood count	Annually
Kidney function	CrCl >60ml/min annually CrCl 30-60ml/min 6 monthly CrCl 15-30ml/min 3 monthly*

*Dabigatran treatment is contraindicated if CrCl < 30ml/min

Monitor U&E's/LFTs more frequently if intercurrent illness

European guidance states that creatinine clearance, calculated using the Cockcroft & Gault equation, needs to be used when checking for correct dosing when monitoring NOACs (SystmOne>tools>renal calculations use ideal body weight or actual if lower).

Detailed guide

A detailed guide is given on the following pages.

Bleed risk needs to be managed both at initiation of a NOAC and on an on-going basis e.g. BP needs to be managed, alcohol intake should be limited and all gastric irritant drugs e.g. SSRI and antidepressants need to be reviewed.

A proton pump inhibitor should be offered on initiation of a NOAC if felt appropriate**.**

References

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Prescribing Support Bitesize

	Apixaban	Rivaroxaban
Tests prior to starting treatment	Kidney function, body weight, baseline clotting screen, FBC, LFTs, BP	Baseline clotting screen, U&Es, LFTs, FBC, BP
Monitoring until patient is stabilised	No routine anticoagulation monitoring required. Ideally assess every 3 months to: • Assess compliance and reinforce advice regarding regular dosing schedule. • Enquire about adverse effects such as bleeding. • Assess for the presence of thromboembolic events • Enquire about other medicines, including OTC medicines	No routine anticoagulation monitoring required. Ideally assess every 3 months to: • Assess compliance and reinforce advice regarding regular dosing schedule. • Enquire about adverse effects such as bleeding. • Assess for the presence of thromboembolic events. • Enquire about other medicines, including OTC medicines.
Ongoing monitoring	Patient compliance should be assessed every three months ideally Enquire about presence of any adverse effects, in particular signs and symptoms of bleeding and anaemia, every three months ideally. Kidney function may decline whilst on treatment so it should be monitored annually for patients with CrCl >60ml/min or every six months for patients with CrCl 30-60ml/min or every three months if the person has a CrCl between 15-30ml/min More frequent U&E's/LFTs advised if intercurrent illness that may impact kidney or liver function. LFTs annually Full blood count annually No routine anticoagulation monitoring is needed.	Patient compliance should be assessed every three months ideally Enquire about presence of any adverse effects, in particular signs and symptoms of bleeding and anaemia, every three months ideally. Kidney function may decline whilst on treatment so it should be monitored annually for patients with CrC l>60ml/min or every six months for patients with CrCl 30-60ml/min or every three months if the person has a CrCl between 15-30ml/min More frequent U&E's/LFTs advised if intercurrent illness that may impact kidney or liver function. LFTs annually Full blood count annually No routine anticoagulation monitoring is needed.
Action required if abnormal results	Reduce the dose to 2.5mg twice daily if the person's CrCl is 15- 29ml/minute/1.73m^2, or if serum creatinine is 133micromol/L and the patient is aged 80 years or older or weighs less than 60kg If CrCl <15ml/min stop apixaban, assess for bleeding and seek advice regarding alternative anticoagulation therapy. If liver enzymes are elevated (ALT/AST >ULN) or total bilirubin ≥1.5 x ULN apixaban should be used with caution (these patients were excluded from clinical trials). If the patient's HASBLED score is more than 3, then the patient is at a high risk of bleeding and apixaban should be used cautiously, with regular reviews. A low haemoglobin may suggest that occult bleeding is occurring and may require further investigation.	If kidney function has declined, review treatment, as rivaroxaban may need to be stopped or a lower dose may be required. If CrCl 15-49ml/min reduce dose to 15mg once daily. If CrCl< 15ml/min stop rivaroxaban, assess for bleeding and seek advice regarding alternative anticoagulation therapy. If the patient's HASBLED score is more than 3, then the patient is at a high risk of bleeding and rivaroxaban should be used cautiously, with regular reviews. If there is an unexplained fall in haemoglobin and/or haematocrit, occult bleeding may be present which may require further investigations.
Discontinuation around surgery	Apixaban should be discontinued at least 48 hours prior to elective surgery or invasive procedures with a moderate or high risk of bleeding. It should be discontinued at least 24 hours prior to elective surgery or invasive procedures with a low risk of bleeding. It should be restarted after the procedure/surgery as soon as possible provided adequate haemostasis has been established.	Rivaroxaban should ideally be stopped 24 hours prior to surgery if possible.
Use in a monitored dosage system (MDS)	Apixaban can go into a monitored dosage system (MDS)	Rivaroxaban can go into a monitored dosage system (MDS)
Significant drug interactions	• Analgesics (intravenous diclofenac, ketorolac) • Anticoagulants • Antifungals (e.g. ketoconazole, itraconazole, posaconazole and voriconazole)	• Analgesics – diclofenac, ketorolac • Anticoagulants • Antifungals – ketoconazole • Antivirals – ritonavir

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Prescribing Support Bitesize

	Dabigatran	
Tests prior to starting treatment	Kidney function, Baseline clotting screen, Full blood count, LFTs, BP	
Monitoring until patient is stabilised	No routine anticoagulation monitoring required. Ideally assess every 3 months to: • Assess compliance and reinforce advice regarding regular dosing schedule. • Enquire about adverse effects such as bleeding. • Assess for the presence of thromboembolic events • Enquire about other medicines, including OTC medicines	
Ongoing monitoring	Patient compliance should be assessed every three months ideally. Enquire about presence of any adverse effects, in particular signs and symptoms of bleeding and anaemia, every three months ideally. Kidney function may decline whilst on treatment so it should be monitored annually for patients with CrCl >60ml/min or every six months for patients with CrCl 30-60ml/min, patient >75 or fragile stop/change treatment if CrCl <30ml/min More frequent U&Es/LFTs advised if intercurrent illness that may impact kidney or liver function. LFTs annually Full blood count annually No routine anticoagulation monitoring is needed.	
Action required if abnormal results	If kidney function has declined, review treatment, as dabigatran may need to be stopped or a lower dose may be required. If there is an unexplained fall in haemoglobin and/or haematocrit, occult bleeding may be present and may require further investigation If the patient's HASBLED score is more than 3, then the patient is at a high risk of bleeding and dabigatran should be used cautiously, with regular reviews. The MHRA has advised that because of the significant risk of major bleeding, special care should be taken in patients with co morbidities, procedures and concomitant treatments and attention should be paid to kidney function. There is no specific antidote to dabigatran and excessive anticoagulation may require interruption of treatment.	
Discontinuation around surgery	Dabigatran will need to be stopped between 24 hours and 4 days prior to elective surgery depending on renal function and the risk of associated bleeding.	
Use in a monitored dosage system (MDS)	Dabigatran CANNOT go into a monitored dosage system (MDS)	
Significant drug interactions	· Analgesics – NSAIDs, diclofenac,ketorolac · Anti-arrhythmics – amiodarone, dronedarone · Antibacterials – rifampicin · Anticoagaulants – apixaban, rivaroxaban · Antidepressants – SSRI or SSRI related antidepressants · Antifungals – ketoconazole, itraconazole	