821FM.2 SUMMARY OF BLOOD MONITORING REQUIREMENTS FOR AMBER DRUGS

This guideline does not encompass all amber medicines; it only includes medicines which need blood monitoring – please refer to individual amber guidelines for non-blood monitoring required.

FREQUENCY OF MONITORING	IN SECONDARY CARE Pre Tx (Treatment) & at Initiation	ONGOING MONITORING IN PRIMARY CARE					ADDITIONAL COMMENTS
		Monthly	2 monthly	3 monthly	6 monthly	Annually	
AMIODARONE (632FM.2)	**Pre Tx**: ECG, BP & pulse, U&Es (including K+, CrCl), LFTs, Free T3 & T4, assessment of normal lung capacity.				U&Es[1], (K+, CrCl) ALT, Free T3 & T4	HR and ECG	[1]Ensure K+ levels maintained in top half of range, i.e. between 4.3 - 5.1 mmol/L (if not replace until it is)
AZATHIOPRINE (787FM.2.1)	**Pre Tx**: Weight/height BP/TPMT. FBC, U&Es, creatinine, eGFR, albumin & ALT, ESR/CRP. **Initiation:** Monitor every 2 weeks until on stable dose for 6 weeks (4 weeks for Dermatology patients).	FBC, U&Es, creatinine, eGFR, albumin & ALT for 3 months[2]	*(Monitor more frequently for those at higher risk of toxicity)*	**On stable dose:** FBC, creatinine, U&Es, eGFR, albumin, LFTs (alb ad ALT)			[2]**After any dose change:** check FBC, U&Es, eGRF, LTFs every 2 weeks until stable for 6 weeks then 3 monthly. Check ESR/CRP: 1 - 3 monthly.
CICLOSPORIN (788FM.2.1)	**Pre Tx**: U&Es, eGFR, FBC, CRP, LFTs and fasting lipids (serum cholesterol and triglycerides). **Initiation:** Check U&Es, eGFR Weekly (month 1) Fortnightly (month 2) Monthly (thereafter).	BP[3], FBC, U&Es, eGFR, LFTs, CRP/ESR fasting serum cholesterol & triglycerides	*(Monitor more frequently for dose change or if NSAIDs added)*		Fasting serum cholesterol & triglycerides		[3]Maintain BP <140/90 mmHg (check BP fortnightly for first 2 months then monthly thereafter).
DENOSUMAB (401FM.3)	**Pre Tx:** Creatinine/eGFR, Ca, PO4, 25(OH) vitamin D. NOTE: The first and subsequent injections are administered in primary care				**1 to 4 weeks before each 6 monthly injection**: Ca, U&Es. Also 25(OH) vitamin D if concern that Ca +Vit D supplements not being taken.		In patients with eGFR <30 ml/min check serum Ca 2/52 after injection
FEBUXOSTAT (781FM.1)	FBC, LFTs, eGFR/CrCl, uric acid pre-treatment and at 2 - 4 weeks. (TFTs in known thyroid dysfunction – if not done in last 3 months.)				FBC, LFTs and uric acid for 1st year[4]	Annual uric acid level (2nd year onwards)	[4]FBC, LFTs for 1st year of treatment only (take at same time as uric acid levels). Target uric acid level <0.3 mmol/L
HYDROXYCHLOROQUINE (795FM.3.1)	FBC, U&Es, creatinine, eGFR, LFTs, CRP/ESR					U&Es, eGFR	Retinal Screening >5 years Tx or additional risk factors
DONEPEZIL RIVASTIGMINE & GALANTAMINE (786FM.2.2)	U&E, LFTs pre -treatment only	*(No dose adjustment required in mild to moderate renal/ hepatic impairment)*				U&Es, LFTs[5]	[5]U&Es, LFTs only if evidence of chronic renal/ hepatic disease
LEFLUNOMIDE (790FM.2.1)	**Pre Tx**: FBC, LFTs, U&Es, eGFR, CRP/ESR **Initiation:** Every 2 weeks until dose stable for 6 weeks, then monthly, then quarterly.	FBC, U&Es, CRP, LFTs, BP[3] (monthly only if also on methotrexate (MTX) or other hepatotoxic drug)[2]		(BP & weight)			CRP/ESR every 3 - 6 months depending on disease activity.

FREQUENCY OF MONITORING	In SECONDARY CARE Pre Tx (Treatment) & at Initiation	ONGOING MONITORING IN PRIMARY CARE					ADDITIONAL COMMENTS
		Monthly	2 monthly	3 monthly	6 monthly	Annually	
LITHIUM (793FM.3.1)	U&Es, TFT, FBC and ECG pre treatment. Lithium level 1 week after initiation and following any dose change.			Lithium level[6]	U&Es, TFT	After 1st year, Li levels 6 monthly If appropriate	[6]Lithium levels to be carried out at 12 - 14 hours post dose. For BD dosing
MERCAPTOPURINE (115FM.2.1)	**Pre Tx**: FBC, U&Es, LFTs **Initiation:** FBC weekly for 1st month then fortnightly month 2 and month 3. LFT at 2, 4 and 8 weeks.			FBC, LFTs, U&Es			
MINOCYCLINE (161FM.7)	**Pre Tx**: FBC, U&Es, LFTs ONLY if history of abnormal results.			FBC, LFTs, U&Es[7]			[7]Only if treatment is to continue >6 months. LFTs >2xULN (stop drug and seek specialist advice).
METHOTREXATE (794FM.2.1)	**Pre Tx**: FBC, U&Es, eGFR, LFTs. **Rheum** - CRP/ESR. **Initiation:** then monitor every 2 weeks for 6 weeks or until stable on dose. **Derm -** FBC, LFT and U&Es every 1 - 2 weeks (month 1) & until steady dose regime.	FBC, LFTs, albumin, creatinine/ eGFR for 3 months[8]	**On stable dose:** FBC, LFTs and U&Es **Rheum/Gastro** – 3 monthly **Derm** – 2 - 3 monthly (as advised by Consultant Dermatologist)				[8]**Rheum** - CRP/ESR every 3 - 6 months depending on disease activity
PENICILLAMINE (799FM.2.1)	**Pre Tx**: FBC, U&Es, eGFR, LFTs (ALT, albumin), CRP/ESR **Initiation:** FBC & urinalysis 2 weekly until dose is stable for 3 months then monthly	FBC, U&Es, LTFs, eGFR, CRP/ESR, urinalysis[9]	U&Es, eGFR, ALT, albumin, CRP/ESR every 3 - 6 months (as advised by specialist)				[9]Urinalysis for proteinuria screen
SULFASALAZINE (798FM.2.1)	**Pre Tx**: FBC, U&Es, creatinine, eGFR, LFTs **Rheum** - CRP/ESR **Initiation:** then monitor every 2 weeks for 6 weeks or until stable on dose, then monthly for 3 months, then quarterly thereafter.			**On stable dose:** FBC, U&Es, creatinine, eGFR, LFTs (3 monthly for 1st year)[10]			[10]Routine monitoring of monotherapy can be discontinued after 1st year on advice of the specialist
ZONISAMIDE (800FM.2.1)	**Pre Tx:** U&Es, creatinine, eGFR, LFTs					U&Es, creatinine, eGFR, LFTs	Use in caution with renal impairment as renally excreted – discontinue in acute renal failure/clinically significant sustained increase in Cr. No recommended in severe hepatic failure.

See also: *Guideline 43FM Conventional DMARDs Use in Rheumatology, Dermatology, Gastroenterology and Respiratory Patients during the COVID-19 Pandemic*

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