Blood tests for patients prescribed psychotropics: what, when and why?

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Although baseline blood tests are routinely checked on hospital admission when patients may be medication-free, it is frequently forgotten that psychotropic drugs can cause a wide range of abnormalities in such tests, some common and some very rare. These abnormalities, and the monitoring requirements associated with them are summarised in Table 1.

Table 1. Psychotropic drugs and associated blood test results

Drug	Laboratory test	Recommended frequency	Reason
Clozapine	b. FBC (white cells, neutrophils & platelets) and general health screen		Clozapine is associated with neutropenia (3%), and agranulocytosis (0.7%)[1]. Incidence is greatest in the first 18 weeks and gradually reduces. After one year the incidence is the same as that for phenothiazines[1]
	r. FBC	Weekly for 18 weeks, fortnightly until 52 weeks, monthly thereafter if haematologically stable. (CPMS will inform)	
	o. FBC (as above)	PRN if clinically appropriate	(As above)
Other neuroleptics	b. General health screen r. No recommendations		
	o. FBC	PRN if clinically appropriate (sore throat, temperature, etc)	Small risk of neutropenia/ agranulocytosis[2]
	LFTs	PRN if clinically appropriate (abdominal pain, jaundice, etc.)	Small risk of hepatitis (mostly phenothiazines)[3]
	CPK, U&Es, LFTs and FBC	PRN if clinically appropriate (fever, autonomic instability, stiffness, clouding of consciousness)	All may be abnormal in neuroleptic malignant syndrome[4]: CPK grossly raised U&Es renal damage can occur LFTs non-specifically abnormal FBC usually a leucocytosis
Mianserin	b. FBC and general health screen		
	r. FBC	Monthly for the first three months, then clinical monitoring only	Low risk of agranulocytosis/ aplastic anaemia All reported cases in the first 3 months[5] Elderly more prone[5]
	o. FBC	If clinically appropriate (fever, sore throat, anaemia, bleeding, etc.)	As above

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Table 1. *(Continued)*

Drug	Laboratory test	Recommended frequency	Reason
L-tryptophan	b. FBC (with eosinophils) and general health screen		
	r. Eosinophil count	Monthly for the first six months and then 3–6 monthly thereafter	Associated with eosinophilia–myalgia syndrome. Looking for huge (50–100 fold) increases in eosinophil count[6]
	o. Eosinophil count	If clinically appropriate (myalgia, arthralgia, fever, oedema, rash present)[6]	
Other antidepressants	b. General health screen		
	r. No recommendations		
	o. FBC, U&Es and LFTs	If clinically appropriate	Risk of bone marrow suppression, hyponatraemia[7] and hepatitis (all are low risk)
Lithium	b. U&Es, TFTs, and general health screen		
	r. Serum lithium level	5 days after starting, treatment, then weekly until stable (take blood 12 hours post dose)	Lithium has a narrow therapeutic range. Below 0.4 mmol/l is unlikely to be therapeutic. Side-effects increase above 0.8, and toxicity is probable above 1.4 mmol/l[8]
	TFTs	6-monthly	Real risk of hypothyroidism.
	U&Es	6-monthly	Lithium is almost exclusively renally excreted. Worsening renal function would predict toxicity, as would hyponatraemia[8]. Also toxic lithium levels can cause renal damage[8]
	0. Serum lithium, U&Es, TFTs	If clinically indicated	
Carbamazepine	b. FBC, U&Es and LFTs		
	r. FBC, U&Es and LFTs	Check after 2 weeks, then six monthly	Risk of bone marrow suppression[9] (mild suppression is normal). Significant risk of hyponatraemia[10]. Risk of hepatitis (up to 2-fold increase in GGT and ALP is normal)[11]
	o. Serum carbamazepine	Not generally useful unless toxicity or non-compliance suspected.	No therapeutic range identified for psychiatric indications[12]
	FBC (including eosinophils), U&Es and LFTs	If clinically indicated (a rash develops which is neither mild nor self limiting)	Rash in the presence of raised LFTs, raised eosinophils, leucopenia indicates a multisystem hypersensitivity reaction which can be fatal (very rare)[11]
Sodium valproate	b. LFTs, FBC and general health screen		
	r. LFTs	Check after 1 month. Monitor monthly for 6 months if abnormal[13]	Risk if hepatic failure (very rare: usually in children or those with a family history of liver disease)[13]

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Table 1. *(Continued)*

Drug	Laboratory test	Recommended frequency	Reason
	o. Serum valproate level	Not generally useful[13]	Poor correlation between serum levels and clinical effect.
	FBC and amylase	If clinically indicated	Very low risk of leucopenia, thrombocytopenia and pancreatitis[13]

b=baseline tests required.
r=regular tests required.
o=other tests that may be required if clinical circumstances dictate.
FBC, full blood count.
CPMS, clozaril patient monitoring service.
CPK, creatinine phospho-kinase.
U&Es, urea and electrolytes.
LFTs, liver function tests.
TFTs, thyroid function tests.

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