

# Anti- Epileptic Drug (AED) Levels

## A Level Headed Approach

AED blood level monitoring is useful for following clinical scenarios :

Setting	Rationale
Assessing Complex Pharmacokinetics	Narrow therapeutic index; complex metabolism
Initial Therapy	Document successful therapy
During AED Conversions	Ensure sufficiently protective dosing of new AED, Evaluate drug interactions
Therapeutic Failure	Exclude non - adherence/ non - compliance "rule - In" Intractability
Pregnancy	Altered pharmacokinetics
Liver/ Renal Disease	Altered AED metabolism/ clearance
Polypharmacy	Altered pharmacokinetics
Children/ Adolescents	Increased AED Metabolism/ Clearance
Elderly	Decreased AED Metabolism/ Clearance

Sample Requirement: 2 ml serum  
 Test Schedule: Daily :9 am to 9 pm  
 Reported on: Same day at test hours

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## Optimize AED therapy by blood level monitoring :

AED Levels	Efficacy	Side Effects	AED Adjustments?
Super therapeutic Or Sub therapeutic	Seizure-free	None	No
Super therapeutic Or Sub therapeutic	AED responder	Tolerable	Raise dose
Super therapeutic Or Sub therapeutic	Seizure-free	Intolerable	Lower dose; move to new/next AED trial
Super therapeutic Or Sub therapeutic	Intractable	Tolerable Aes	Raise dose if no response plateau
Super therapeutic Or Sub therapeutic	Intractable	Intolerable Aes	Lower dose; move to new/next AED trial; ? epilepsy surgery/VNS
Therapeutic	Seizure-free	No Aes	No

### Timings for collection of samples :

- Steady state plasma levels of anti-epileptic drugs will usually be within the range of experimental measurement errors of the trough concentration for at least 2 or 3 h prior to the next drug dose.
- If possible intermittent toxic manifestations occur, measurement of the drug concentrations at these times is more appropriate than measurement immediately prior to the next dose.

Sample Requirement: 2 ml serum  
 Test Schedule : Daily : 9 am to 9 pm  
 Reported on : Same day after 6 hours