

GUIDELINES TO THERAPEUTIC DRUG MONITORING (TDM)

藥物	治療濃度範圍	抽血時間	達穩定狀態 所須時間	正常半衰期
Amikacin	Adult & Pediatric: Peak: 15-35 ml/l Trough: < 10 mg/l Neonate Peak :20-30ml/l Trough: 2-5 mg/l	Peak: 靜脈點滴 0.5 hrs 後，再隔 0.5 hrs 抽血 或 I.M. 注射 1 hrs 後抽 血 Trough: 下次給藥前	1-2 days 腎功能異常者半衰期 延長,達穩定狀態所須 時間會延長 原則上固定劑量投予 至少三至四次後,再抽 血較有意義。	Adults: 3-5 hrs Neonate, low birth weight(1-3 day): 7hrs Full term > 7 day : 4-5 hrs Children: 1-1.8 hrs
Gentamicin	Adult & Pediatric Peak: 5-12 mg/l Trough: < 2 mg/l Neonate Peak: 5-12 mg/l Trough: 0.5-1 mg/l			Adults :3-5 hrs Children: 1.2-2 hrs Neonate: < 7 days:3-11.5 hrs 1week-6 months:3-3.5hrs
Vancomycin	Adult Peak: 25-40 mg/l Trough: 10-20 mg/l (Complicated infection: 15-20 mg/l) Pediatric & Neonate: trough same as adult	Peak: 靜脈點滴 1 hr 後，再隔 1 hr 抽血 Trough: 下次給藥前		Adults: 4-6 hrs Newborns: 6-10 hrs 3 months-3 years:4hrs > 3 years:2-3 hrs
Cyclosporine	Adult & Pediatric: Whole blood: (Adult)100-400 mcg/l (Pediatric)150-400 mcg/l Plasma: 50-125 mcg/l(因移植器 官而定) Neonate: no data	Peak: 口服給藥 2-4 hr 後 Trough: 下次給藥前	3 days	Adults: 5-18 hrs Children: 3.5-4 hrs
Tacrolimus	Adult: Whole blood: 4-15 ng/ml Pediatric Whole blood: 5-20 ng/ml Neonate: no data	Trough: 下次給藥前	Prograf [®] :1.5-2 days Advagraf [®] :7 days	Adults: Prograf [®] :8-12 hrs Advagraf [®] : 31-38 hrs Children: 10-11.5 hrs
Sirolimus	Adult 5-15 ng/ml Pediatric & Neonate: no data	Trough: 下次給藥前	5-7 days	Adults: 46-78 hrs Child-Pugh class A or B: extend to 113 hours Children: 10-12 hrs
Everolimus	Adult 3-8 ng/ml Pediatric & Neonate: no data	Trough: 下次給藥前	4 days	28 hrs Child-Pugh class B:79 hrs

藥物	治療濃度範圍	抽血時間	達穩定狀態 所須時間	正常半衰期
Lithium	Adult Treatment: 0.6-1.2 mmol/l Prophylaxis: 0.4-0.8 mmol/l Pediatric & Neonate: no data	給藥後至少 12 hrs 或 下次給藥前抽	3-5 days	14-24 hrs In geriatric, CKD, long term therapy: 36-50 hrs
Carbamazepine	Adult & Pediatric 4-12 mg/l Neonate: no data	下次給藥前	2-5 days	Adults: 12-17 hrs Children : 8-14 hrs
Phenobarbital	Adult & Neonate: 15-40 mg/l Pediatric 10-40 mg/l	下次給藥前	Adults: 2- 4weeks Children: 8-15 days	Adult: 53-140 hrs Children: 34-73 hrs Neonate:40-200hrs
Valproic acid	Adult: Epilepsy 50-100 mg/l Mania 50-125 mg/l Pediatric 50-100 mg/l Neonate: no data	下次給藥前	3-5 days	Adults : 6-19hrs Children: 9 hrs(3.5-20hrs) Newborns: 17-40 hrs
Phenytoin	Adult & Pediatric : 10-20 mg/l Neonate: first week 6-15 mg/l, then 10-20 mg/l.	Peak: I.V.: 給藥後 2-4 hrs 非穩定狀態下為確定療效: 1.給予 loading dose (負載劑量)後 24 hrs 2.給予維持劑量後 4-7 days Oral: 給藥後約 6 hrs (3-9 hrs) Trough: 下次給藥前	8-50 days (與劑量有關)	Adults :22 hrs(7-42 hrs) (與劑量有關) Children: 10-70hrs Neonate:18-60hrs
Theophylline	Adult: 5-15 mg/l(peak) Pediatric: 10-20 mg/l Neonate: 7-12 mg/l (apnea); 10-20 mg/l (bronchospasm)	Peak: 1.間歇滴注:給藥後 1 hr 抽 2.持續滴注:開始持續給藥後 8 hr , 然後每 24 hr 內均可抽。 3.持續釋放錠:口服 4-13 hrs 後抽。 4.非穩定狀態下為確定療效:給予負載劑量後 30 min 抽。 Trough:下次給藥前抽	Adults: 2 days Children: 1-2 days Infants: 1-5 days	Adults :8.2-9.8 hrs Premature neonates: 3-15 day :30 hrs 25-57day:20 hrs Full Term neonates(1-2 days): 25 hrs 3-30 wk: 11 hrs Children: 3.4-3.7 hrs
Digoxin	Adults: Atrial fibrillation: 0.8-2 ng/mL Heart failure: 0.5-0.9 ng/mL Pediatric: 0.5-2 mcg/l Neonate: 1-2 mcg/l	1.下次給藥前抽;口服或靜脈注射後至少 6 hrs 2.非穩定狀態下為確定療效:給予負載劑量後 6 hrs	Adults: 5-7 days Pediatric: 7-10 days	Adults: 34-44 hrs Premature: 61-170 hrs Neonates(full term): 35-45 hrs infants and children is 18- 36 hrs

References:

- 1.UpToDate 2016
2. Guide for Drug Level Monitoring of Commonly Used Medications,2012
- 3.Clinical pharmacokinetics,4th
- 4.Micromedex 2016
5. Dynamed 2016