Monitoring while on intravenous antimicrobials

The Royal Children's Hospital Melbourne

Children with infections that require prolonged IV antimicrobials can complete their course through HITH. To do this safely, regular blood tests may be required to monitor therapeutic drug levels and potential toxicity. This should be done in conjunction with other blood tests used to monitor treatment response & guide decision-making if required.

HITH (Wallaby) protocol – toxicity & drug levels

IV Antimicrobial*	*Toxicity monitoring*			*Drug levels*
	Blood tests	**Start day**	**Frequency**	
Aciclovir	FBE/UEC	8	Weekly	Once established on infusion for >24 hours, take for research purposes only
Amikacin	UEC	Prior to start	Weekly	Trough level prior to 3rd dose then every 3-5 days *Amikacin aim <2mg/L* Click here
Benzylpenicillin	FBE/UEC/LFT	15	Weekly	
Ceftriaxone	FBE/UEC/LFT	15	Weekly	
Cephalosporins (other)	FBE/UEC/LFT	15	Weekly	
Clindamycin	FBE/UEC/LFT	15	Weekly	
Daptomycin	UEC/LFT/CK	Prior to start	Weekly	
Flucloxacillin	FBE/UEC/LFT	8	Weekly	
Gentamicin	UEC	3	With levels	Trough level prior to 3rd dose then every 3-5 days *Gentamicin aim <1mg/L* CPG; Neonates
Imipenem-cilastatin	FBE/UEC/LFT	15	Weekly	
Liposomal amphotericin	FBE/UEC/LFT/ CMP	Prior to start	Twice weekly	
Micafungin & other echinocandins	FBE/UEC/LFT/ CMP	Prior to start	Weekly	
Moxifloxacin	UEC/LFT	8	Weekly	
Piperacillin-tazobactam	FBE/UEC/LFT	15	Weekly	
Teicoplanin	FBE/UEC	15	Weekly	Trough level prior to 5th dose, then weekly, for quality improvement
Tobramycin	UEC	Prior to start	Weekly	Patients with cystic fibrosis (CF): Level 12 hours post 1st dose then trough level every 7 days *Aim <2mg/L* Patients without CF: Trough level prior to 2nd-3rd dose and repeat every 3-5 days *Aim <1mg/L* Click here
Trimethoprim-sulfamethoxazole	FBE/UEC/ folate level	15	Weekly	
Vancomycin	UEC FBE	8 15	Twice weekly Weekly	First level >18 hours after commencing infusion, then repeat every 24 hours *Aim steady state level: 15 – 25 mg/L young infants (0 – 90 days of age) and 20 - 25 mg/L children (>90 days of age)* CPG

* This is not an exhaustive list. Please discuss with HITH team to explore alternatives

* Interpretation of drug levels should be made with reference to local guides & discussion with pharmacist
* Additional monitoring may be required for patients with pre-existing renal or hepatic impairment, or those at risk of significant drug interactions (such as patients taking warfarin)

Protocol – treatment response

Blood tests

- For patients requiring prolonged antibiotics for infection, consider CRP and ESR when taking other bloods if they are likely to impact decision-making eg IV-oral switch or cease
- The majority of patients being treated for infections such as osteomyelitis will require weekly FBE/CRP/ESR to monitor clinical progress, as well as antibiotic monitoring above
- Inflammatory markers taken 1-2 days before review can aid in decision-making, eg IV-oral switch

➢ Do not repeat tests that have normalised, unless there is a clinical or radiological deterioration

Imaging

- USS can be arranged while on HITH eg lymphadenitis to assess disease progression
- CT/MRI can be arranged while on HITH eg for brain abscess prior to stopping antibiotics

Wallaby protocol – nursing and medical

Home team medical responsibilities

Request and review pathology results as required (request as inpatient order)
Making management decisions and communicating those decisions to HITH team

HITH medical team responsibilities

Liaise with bedcard team as required
Bi-weekly case conference to review progress

Wallaby care requirements

Collect pathology tests as per orders
Wallaby CNC - will ensure that monitoring is occurring and liaise with bedcard team as required

Potential issues

Drug level excessive – withhold any further doses until discussion with home team
Other abnormal results – responsibility of the bedcard team to review and address - nursing staff to contact bedcard team if concerned abnormal results are missed and no documentation in EMR

Discharge plan

Discharge once completed IV antimicrobials if no other Wallaby care needs (eg wound dressings)
Wallaby ward will arrange line removal if required