Compiled by Pharmacy Department Version 3 (July 2017)
Review Date: 2 years or earlier if necessary

Administration of Antibiotic Injections

The Royal Liverpool and Broadgreen University Hospitals NHS Trust

Antibiotic	Type of administration	Directions	Rate	Fluid restricted patients	Rate in fluid restricted patients
Aciclovir	**IV Infusion only**	Available as powder for reconstitution or Concentrate for Solution for Infusion Powder for reconstitution: Add 10mL W or NS to 250mg vial or 20mL to 500mg vial. (N.B. The reconstituted solution is light yellow and slightly opalescent. Discard the solution if it becomes cloudy or crystals appear before or during the infusion.) **Both forms require further dilution:** Doses up to 500mg add to 100mL NS. Doses 500mg - 1g add to 250mL NS Preferably via central line or, if this is not possible, use large peripheral vein	At least 1 hour	Central line ONLY - undiluted (25mg/1mL)	At least 1 hour
Amikacin	**IV Injection Multiple daily dosing**	Give undiluted or dilute with 10-20mL NS or G Preferably via central line or, if this is not possible, use large peripheral vein	2-3 minutes		
	IV Infusion for ONCE daily dosing	Dilute the required dose in 100mL NS or G Preferably via central line or, if this is not possible, use large peripheral vein (N.B. Amikacin solution may darken from colourless to pale yellow.)	30 to 60 minutes.	Required dose to be diluted up to 50mL total volume.	30 minutes.
	IM Injection	No reconstitution or dilution required			
Amoxicillin	**IV Injection**	For doses of 1g or less ONLY. Preferably via central line or, if this is not possible, use large peripheral vein Reconstitute 250mg vial with 5mL W, 500mg with 10mL W, 1g with 20mL W. N.B. Reconstituted solutions are normally a pale straw colour; however, a transient pink colour or slight opalescence may appear during reconstitution.	3-4 minutes		
	IV Infusion	Reconstitute as for IV injection Add reconstituted solution to 100mL NS **(P)** or G Preferably via central line or, if this is not possible, use large peripheral vein	over 30-60 minutes		
	IM Injection	Do not inject more than 1 g of amoxicillin at one time in adults. Reconstitute 250mg vial with 1.5mL W, 500mg vial with 2.5mL W, or 1g vial with 2.5mL W or 1% lidocaine hydrochloride			
Benzylpenicillin	**IV Injection**	Reconstitute 600mg vial with 4 to 10 mL of W or NS, and 1200mg vials with a minimum of 8mL W or NS Contents of the vial should be withdrawn and further diluted: 600mg vial to a final volume of 10mL and 1200mg vial to a final volume of 20mL	Less than 1200mg over 3- 5 minutes For 1200mg and above maximum rate is 300mg/min	Central line ONLY Reconstitute 600mg vial with 4mL of W or NS, and a minimum of 8mL to 1200mg vials	
	IV Infusion	Reconstitute as per IV injection then add to 100mL NS or G (Use G in patients with a history of renal failure and/or heart failure)	30-60 minutes	Minimum final volume as per IV injection	30-60 minutes
	IM Injection	Reconstitute 600mg vial with 1.6 to 2.0 mL of W			
Ceftazidime	**IV Injection**	Reconstitute 500 mg vial with 5mL W, 1 g vial with 10mL W, 2 g vial with 10mL W or 3g vial with 15mL W (A clear, light yellow to amber solution should be obtained after shaking)	3-5 minutes		
	IV Infusion	Reconstitute the contents of the vial as for IV injection Further dilute 1g or 2g doses with a minimum of 50mL NS or G and 75ml for a 3g dose	15 to 30 min		
	Continuous IV infusion	Give a loading dose, followed by a continuous infusion over 24 hours. Reconstitute the contents of the vial as for IV injection Further dilute the dose with NS or G a minimum of 100mL for a 4g (continuous infusion) dose.	24 hours		
	Deep IM Injection	Reconstitute 500mg vial with 1.5mL W, 1g vial with 3mL W. For doses greater than 1g inject in two separate sites. May be reconstituted with 0.5% or 1% Lidocaine Hydrochloride Injection to reduce pain on injection			
Cefuroxime	**IV Injection**	Reconstitute 250mg vial with 2ml W, 750mg vial with 6ml W and 1.5g vial with 15ml W Addition of water results in a yellowish or a clear solution	3-5 minutes		
	IV Infusion	Reconstitute the contents of the vial as for IV injection then dilute dose required to 50mL or 100mL with NS or G	30 minutes		
	Deep IM Injection	Reconstitute 250mg vial with 1ml W, 750mg vial with 3ml W, 1.5g vial with 6ml W. Administer doses greater than 750mg in 2 sites due to volume			
	IV infusion with Metronidazole	1.5 g cefuroxime sodium constituted with 15 mL Water for Injection may be added to metronidazole infusion (500 mg/100 mL)	30minutes		
Ceftaroline	**IV infusion**	Reconstitute each 600mg vial with 20 ml of W. Dilute the dose required in a minimum of 50mL NS or G	60 minutes		
Chloramphenicol	**IV injection (P)**	To the 1g vial add 9.2mL of W, NS or G. Maximum concentration 10% (100mg/ml)	At least 1 minute		
	IV infusion	Reconstitute as above then add to a minimum of 50ml G or NS	20-30 minutes		
	IM injection	Add 1.7ml W or NS to 1g vial (absorption can be slow and erratic)			
Ciprofloxacin	**IV Infusion only**	Ready diluted. Preferably via central line or, if this is not possible, use large peripheral vein	400mg over at least 60 minutes 200mg over 30minutes		
Clarithromycin	**IV Infusion only**	Reconstitute 500mg vial with 10ml W then add to 250ml NS or G. Administer into a large peripheral vein	60 minutes	**Central line ONLY – 500mg/100ml**	**60 minutes**
Co-amoxiclav	**IV Injection**	Reconstitute 600mg vial with 10ml W or 1.2g vial with 20ml W A transient pink colouration may develop during reconstitution. Reconstituted solutions are normally colourless or a pale straw colour	3-4 minutes		
	IV Infusion	Reconstitute as per IV Injection then add 600mg to 50ml NS or 1.2g to 100ml NS	30 minutes		
Co-trimoxazole	**IV Infusion only**	Doses up to 480mg – add to 100ml NS or G Doses 481-960mg – add to 250ml NS or G Doses 961-3840 – add to 500ml NS or G Doses 3841mg and above – add to 1L NS or G **Use infusion pump.** Preferably via central line or, if this is not possible, use large peripheral vein If visible turbidity or crystallisation appears at any time before or during an infusion, discard the mixture	Doses up to 3840mg – over 60-90minutes Doses 3841mg and above over a minimum of 2 hours.	**1. Central line ONLY in critical care areas - undiluted** 2. Add each vial to 75ml G	1. 90 to 120 minutes 2. 60 minutes
Daptomycin	**IV Injection**	Reconstitute 350mg vial with 7ml NS and 500mg vial with 10ml NS. Do not shake as this will cause foaming of the product. The reconstituted solution ranges in colour from pale yellow to light brown. Preferably via central line or, if this is not possible, use large peripheral vein	2 minutes		
	IV Infusion	Dilute the reconstituted solution with NS (typical volume 50mL) Preferably via central line or, if this is not possible, use large peripheral vein	30 minutes		
Ertapenem	**IV Infusion only**	Reconstitute the contents of a 1g vial with 10mL W or NS and add to a 50mL bag of NS Reconstituted solutions of ertapenem range from colourless to pale yellow	30 minutes		
Flucloxacillin	**IV Injection**	Reconstitute 250 to 500mg in 5 to 10ml W or 1g in 15 to 20ml W	Doses less than 2g: 3-4 minutes 2g or more: 6-8 minutes		
	IV Infusion	Reconstitute as for IV injection then add to 100ml NS or G	30-60 minutes		
	IM Injection	Reconstitute 250mg vial with 1.5ml W and 500mg vial with 2ml W			
Gentamicin	**IV injection for Multiple daily dosing**	**Can be given undiluted, or diluted with 10-20mL NS or G to aid slow administration.** Preferably via central line or, if this is not possible, use large peripheral vein	**3-5 minutes**		
	IV Infusion for ONCE daily dosing (P)	**Dilute with 100mL NS or G** Preferably via central line or, if this is not possible, use large peripheral vein	**Give over 60 minutes**		
	IM injection	No reconstitution or dilution required			
Levofloxacin	**IV infusion**	Ready diluted. Use an infusion pump Preferably via central line or, if this is not possible, use large peripheral vein	250mg over at least 30min 500mg over at least 60min 750mg over at least 90min		
Meropenem	**IV Injection**	**Doses of up to 1g only**. Dilute each 500mg vial with 10ml W and 1g with 20ml W Shake the reconstituted solution until clear and all the powder has dissolved Reconstituted solutions are clear, range from colourless to yellow, and are free of particles.	5 minutes		
	IV Infusion (P)	Reconstitute as for IV injection but can use W, NS or G. Further dilute with 1g doses with 50ml or 2g dose with 100ml of NS or G	15 to 30 minutes		
Metronidazole	**IV Infusion**	Ready diluted: 500mg in 100ml. (Compatible with cefuroxime -*see above*)	At least 20 minutes		
Piperacillin and tazobactam	**IV Infusion only**	Reconstitute each 4.5g vial with 20ml of W, NS or G. The reconstituted solutions may be further diluted to the desired volume (e.g. 50 ml to 150 ml) with NS, or G	30 minutes	Reconstitute the vial with 20ml W or NS and administer via IV injection	5 minutes
Rifampicin	**IV Infusion only**	Reconstitute each 600mg vial with the solvent provided. Further dilute with 500ml NS or G	2-3 hours	After reconstitution add to 100mL of diluent to give a concentration of 6mg in 1mL	**30minutes (unlicensed)**
Teicoplanin	**IV Injection**	Reconstitute each vial (200mg or 400mg) with 3.14 mL of W provided. Each 3ml of solution contains the selected dose from the vial. Only clear and yellowish solutions should be used.	3-5 minutes		
	IV Infusion	Once reconstituted it may be further diluted with any suitable volume of NS or G	30 minutes		
	IM Injection	Reconstitute as for IV injection			
Temocillin	**IV injection**	Reconstitute each 1g vial with 10ml W to form a pale yellow solution	3-4 minutes		
	IV infusion	Reconstitute as above and add to 50 to 150mL NS or G	30-40 minutes		
	IM injection	Reconstitute 1g vial with 2ml W (lidocaine hydrochloride 0.5-1% may be used in place of W)			
Tigecycline	**IV Infusion only**	Reconstitute each 50mg vial with 5.3 ml of NS or G. Each 5ml of the reconstituted solution gives a 50mg dose. Add 50mg or 100mg dose to 100mL of NS or G. Tigecycline should be yellow/orange in colour once reconstituted.	30 to 60 minutes.		
Vancomycin	**IV Infusion only**	Reconstitute 500mg vial with 10ml W or 1g vials with 20ml W. Doses ≤ 500mg: add to 100ml NS or G Doses >500mg - ≤1.25g: add to 250ml NS or G. Doses >1.25g: add to 500ml NS or G Preferably via central line or, if this is not possible, use large peripheral vein	Max. rate 10mg/min Doses of up to and including 500mg; give over 60 minutes Doses of 1g; give over 120 minutes Doses of 1.5g; give over 180 minutes Doses of 2g; give over at least 240 minutes.	**Central line ONLY** **500mg in 50ml or 1g in 100ml**	**Max. rate 10mg/min**

Key: W = Water for injection, NS = Sodium Chloride 0.9%, G = Glucose 5% **(P) = Preferred Method.**

References: SPCs from www.emc.medicines.org.uk, IV guide (Medusa), UCL Injectable Medicines Administration guide (3rd edition), Renal Drug Database, UKCPA minimum infusion volumes (3rd Edition)

Penicillin Allergy: Contraindicated

Penicillin Allergy:
1. **AVOID if serious penicillin allergy (e.g. anaphylaxis/angioedema)**
2. **USE WITH CAUTION if non-severe allergy and no alternative available**

Penicillin Allergy: Considered Safe