### Midline Catheter Administration of Antibiotics

Approved by Allina ID Task Force 5/9/2017

Generic Name	Yes	Usually	Maybe <sup>a</sup>	No	Phlebitis Risk <sup>1,2</sup>	Comments
Acyclovir				х	High	Irritant
Amikacin	х				Not Rated	once daily dosing
Ampicillin		х			Medium	limited stability; difficult to use outpatient
Ampicillin-sulbactam		х			Medium	
Azithromycin		х			Not Rated	
Cefazolin	х				Low	stable > 24hrs; syringe and electronic infusion pump compatable
Cefepime		х			Low	stable > 24hrs; syringe and electronic infusion pump compatable
Cefotaxime	х				Not Rated	
Cefoxitin	х				Not Rated	
Ceftazidime	x				Low	stable > 24hrs; syringe and electronic infusion pump compatable
Ceftriaxone	х				Low	once daily dosing
Cefuroxime	x				Low	
Ciprofloxacin			х		Not Rated	
Clindamycin	x				Low	stable > 24hrs; syringe and electronic infusion pump compatable
Daptomycin*		x*			Low	once daily dosing, pH is low but low phlebitis, manuf ok's midline
Doxycycline			х		Medium	once daily dosing; need to protect from sunlight
Ertapenem		x			Medium	Hateley C et al Lancet 2016;387:284. given via midline x5 weeks
Erythromycin				х	High	
Gentamicin			х		Low	once daily dosing
Imipenem-cilastatin		x			Medium	limited stability; difficult to use outpatient
Levofloxacin			х		Not Rated	
Meropenem		x			Low	limited stability; difficult to use outpatient
Nafcillin <sup>b</sup>				xb	High	stable > 24hrs; syringe and electronic infusion pump compatable
Oxacillin <sup>b</sup>				xb	Medium	stable > 24hrs; syringe and electronic infusion pump compatable
Penicillin G <sup>*b</sup>		<b>x*</b> ,b			Medium	stable > 24hrs; syringe and electronic infusion pump compatable
Piperacillin-tazobactam		x <sup>d</sup>			Not Rated	stable > 24hrs; syringe and electronic infusion pump compatable
Sulfa-Trimthoprim				х	Medium	
Tobramycin			х		Low	once daily dosing
Vancomycin <sup>b</sup>				x <sup>c,e</sup>	Medium	once daily dosing possible

Usually: <14 days acceptable; individual home infusion policies may vary - need to confirm before discharge; assess phlebitis risk if friable veins

Maybe: <7 days recommended; some home infusion companies will not allow - need to confirm before discharge; not recommended if friable veins

No: Generally not recommended and home infusion companies often refuse; certain exceptions exist (see footnotes)

#### **Midline Catheter Administration of Antibiotics**

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\*PICC preferred if > 7 days in some references

<sup>a</sup>Maybe = sources are conflicting or information is sparse, <7-14 days likely acceptable but have some risk of irritation to veins; need to assess benefit/risk to patient

<sup>b</sup>Typically prepared at a concentration not amenable to long-term peripheral or midline administration, but concentration may be adjusted

<sup>c</sup> Several studies have found that peripherally infused vancomycin causes no more phlebitis than other antibiotics (Lanbeck P. *Scan J Infect Dis.* 2002; Mowry JL et al. West J Nurs Res 2010; Roszell S et al J Infus Nurs. 2010).

<sup>d</sup>Pip/tazo underwent a reformulation to resolve some issues including pH. However, the pH can be variable depending on manufacturer and can be as low as 3.2 (Desi NR, et al. Ther Clin Risk Manag 2008 Apr;4(2):303-314)

<sup>e</sup>Concentrations of 5 mg/mL are usually acceptable, but typically prepared at 10 mg/mL. Need to ensure proper preparation and home infusion willingness <sup>1</sup> Degree of tendency to cause phlebitis; 1, mild; 2, moderate; 3, high; NR, not rated. (Paladino JA, Portez D. Outpatient Parenteral Antimicrobial Therapy Today. *Clin Infect Dis* 

(2010) 51 (Supplement\_2):S198-S208.)

<sup>2</sup> The 2016 Infusion Nurses Society Standards recommend cautious use of noncontinuous (or intermittent) vesicant antimicrobial administration because there is the risk of undetected extravasation due to the deeper vein placement.

## **Antibiotics and Midline Catheters**

Approved by the Allina ID Task Force 5/9/2017

### **Evidence Summary**

- There are no specific guidelines regarding which antibiotics are, or are not to be given via a midline catheter, and recommendations in the literature are conflicting
- Almost all antibiotics can be administered via a midline or peripheral line short-term; long-term use increases the risk of undetected extravasation due to deeper vein placement
- The following recommendations are nonspecific drug recommendations from various authorities
  - Do NOT use midline catheters for continuous vesicant therapy, parenteral nutrition, or infusates with an osmolarity greater than 900 mOsm/L
  - DO use midlines for drugs with pH 5-9 (near plasma level) or osmolarity < 500 mOsm
    - pH theory has come into question by some given that drugs like erythromycin (pH 6.5-7.5) cause far more phlebitis than drugs such as vancomycin
  - Avoid use of midline catheters when patient has a history of thrombosis, hypercoagulability, decreased venous flow to the extremities, or ESRD requiring vein preservation (Infusion Nurses Society)
- When comparing PICCs vs Midlines:

	PICC	Midline
•	BSI rate: 2.79 – 4.79 per 1000 catheter days o Public reporting required	<ul> <li>BSI rate: 0.2 per 1000 catheter days (homecare rate of 0.9/1000 catheter days)</li> <li>Public reporting not required</li> </ul>
•	DVT rate: 1 – 38.5% symptomatic; 27.2% asymptomatic Tip dislocation rate: 15.4% (usually to neck)	• DVT rate: <2%
•	<ul> <li>Last 7.3 – 16.6 days</li> <li>Complete 71 - 87% of intended therapy</li> </ul>	<ul> <li>Last 7.69 - 16.4 days         <ul> <li>Complete 79 – 89% of intended therapy</li> </ul> </li> </ul>
•	More expensive	Less expensive

- Overall, midline catheters are associated with lower rates of phlebitis than short peripheral catheters and lower rates of infection compared to central venous catheters
  - In one prospective study of 140 midline catheters:
    - No specific risk factors, including duration of catheterization, were associated with infection.
    - Midlines were in place a median of 7 days, and as long as 49 days
- Duration: Typical maximum dwell time is 2 to 4 weeks. If therapy is to extend beyond 4 weeks, a PICC is commonly placed, but replacing the midline catheter instead can be considered.
- Blood draws are not recommended via midlines, and blood draws are strongly discouraged via PICC lines. (Note: Drug levels are not recommended via PICC.)

Study	Population	Intervention	Outcome	Comments
Caparas et al (2014) <sup>3</sup>	Patients (n=54) randomized to midline device or PICC to receive vancomycin (<6 days, but greater than 1 dose)	<ul> <li>Vancomycin 4 mg/mL administered over at least 60 minutes by infusion pump</li> <li>29 patients received IV vancomycin for &gt;5 days</li> </ul>	<ul> <li>No cases of phlebitis or thrombosis</li> <li>Complications 17.9% vs 19.9% for PICCs vs midlines</li> <li>Midlines: 1 "leak", 2 dislodgements, 3 Grade I infiltrations</li> <li>PICCs: 1 suspected BSI, 4 dislodgements</li> </ul>	No CLABSIs, thrombosis, phlebitis noted with midline catheter.
Harwood et al (1992)	Outpatients (n=27) with cystic fibrosis Mean age: 22 Mean weight: 109 lb	<ul> <li>2 week courses of antibiotics</li> <li>&gt;95% received tobramycin (150 mg/100 mL D5W) or ceftazidime (3 g/100 mL D5W)</li> </ul>	<ul> <li>Midline dwell times: 0.2-48 days, average 12 days</li> <li>Almost 60% of midlines reached end of therapy</li> </ul>	Phlebitis rates published for PICCs and short peripheral caths at 7 days are 20% and >51%, respectively

Table 1. Selected evidence summary for midline catheters

Study	Population	Intervention	Outcome	Comments
		• 41 midlines in 27 patients	<ul> <li>80% of midline cath removals were for non- catheter related reasons</li> <li>No cases of phlebitis</li> </ul>	
Fontaine et al (1991)	Pilot study (n=43) of homecare patients with osteomyelitis (32%) and infections on antibiotics	<ul> <li>58 midlines in 43 patients</li> <li>31 patients had one insertion</li> <li>9 patients had two insertions</li> <li>3 patients received three insertions</li> <li>70% were inserted in cephalic vein, 30% were basilic</li> <li>76% of infusions were IV antibiotics; 92% of all infusates had the side effect of "phlebitis" listed by manufacturer</li> </ul>	<ul> <li>Median time to complication was 16 days (one half the midline catheters would have dwelled for 16 days if they were removed for catheter complications). Patients in this study had a history of catheter restarts every 2.7 days with peripheral catheters.</li> <li>Reasons for removal</li> </ul>	14 midline catheters were removed for phlebitis (average time to occurrence = 8 days) 7 cases of phlebitis were thought to be chemical. Three patients had infusions of nafcillin 2g/100 mL q4h and penicillin VK 2 million units in 50 o4 100 mLmL NS q4h. Phlebitis occurred within 2 hours to 1 week post infusion. Medications were diluted further which improved dwell times.

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# Infusion Drug List: pH, Osmolality, reported phlebitis

Drug	Diluent	рН	mOsmol/L	Phlebitis*
Acyclovir	NS @ 5mg/ml	10.5-11.6	316	yes
Amikacin	NS @ 5mg/ml	3.5-5.5	349	
Aminophylline	NS @ 5mg/ml	8.6 - 9	327	
Amiodarone	D5W @ 2mg/ml	4.1		yes
Amphotericin B	D5W @ 0.1mg/ml	5.7	256	yes
Amphotericin B Albecet	D5W @ 1-2mg/ml	5.5 - 6	~280	yes
Amphotericin B Ambisome	D5W @ 1-2mg/ml	5 - 6	~280	yes
Amphotericin B Amphotec	D5W @ 0.2-0.8mg/ml	5 - 6	~280	yes
Ampicillin - Sulbactam	NS 100ml	9 (8 - 10)	~400	yes
Ampicillin 1 & 2 gm	NS 100ml	9 (8 - 10)	328 - 372	
Amrinone	NS @ 2.5mg/ml	3.2 - 4	~300	yes
Azithromycin 500 mg	NS @ 2mg/ml	6.4 - 6.8	~280	yes
Aztreonam 1 gm	SWI 10ml	6 (4.5-7.5)		
Aztreonam 1 - 2 gm	NS 100 ml	6 (4.5-7.5)	315-352	
Aztreonam 1- 2 gm Frozen	Dextrose 50ml	5.0 - 5.6	270 - 330	
Bleomycin	NS@3units/ml	4.5 - 6	~300	
Carboplatin	D5W 0.2 - 2 mg/ml	5 - 7	~250	
Carmustine	D5W 250 - 500ml	5.6 - 6		
Caspofungin	NS @ 0.28-0.35 mg/ml	6.6		yes
Cefamandole 1 gm	SWI 10 ml	6-8.5	466	-
Cefamandole 1 gm	NS 100ml	7 (6-8.5)	314	
Cefazolin 1 - 2 gm	SWI 10 ml	4.5-7	293	
Cefazolin 1 - 2 gm	NS 100 ml	4.5-7	317 - 351	
Cefazolin 1 gm Frozen	Dextrose 50ml	5.4 - 6.4	270 - 330	
Cefazolin 500mg Frozen	Dextrose 50ml	5.4 - 6.4	270 - 330	
Cefepime 1 - 2 gm	NS 100 ml	4 - 6	307	
Cefmetazole 2gm	NS 100 ml	4.2 - 6.2	317	
Cefoperazone 1 gm	SWI 10ml	5 (4.5-6.5)	290	
Cefoperazone 1 gm	NS 100ml	5 (4.5-6.5)	307	
Cefoperazone 1gm Frozen	Dextrose 50ml	5.3 - 5.8	276 - 324	
Cefoperazone 2 gm Frozen	Dextrose 50ml	5.3 - 5.8	276 - 324	
Cefotaxime 1-2 gm	NS 100 ml	5-7.5	344 - 351	
Cefotaxime 1 gm	SWFI 10 ml	5-7.5	357	
Cefotaxime 1- 2 gm Frozen	Dextrose 50ml	6.2 - 6.8	270 - 330	
Cefotetan 1 gm	NS 100 ml	4.5-6.5	~380	
Cefotetan 2 gm	NS 100 ml	4.5-6.5	~420	
Cefotetan 1- 2 gm Frozen	Dextrose 50ml	5.0 - 6.4	270 - 330	
Cefotetan 1 gm	SWI 10 ml	4.5-6.5	400	
Cefoxitin 1 - 2 gm	NS 100 ml	4.2-8	319 - 355	
Cefoxitin 1 gm	SWI 10 ml	4.2-8	390	
Cefoxitin 1- 2 gm Frozen	Dextrose 50ml	5.9 - 6.6	270 - 330	
Ceftazidime 1 gm	SWI 10 ml	5.5 - 8	240	
Ceftazidime 1 gm Frozen	Dextrose 50ml	5.4 - 6.0	270 - 330	
Ceftazidime 1-2 gm	NS 100 ml	5.5 - 8	330	
Ceftazidime 2 gm	SWI 20 ml	5.5 - 8	240	
Ceftazidime 2 gm Frozen	Dextrose 50ml	5.4 - 6.0	270 - 330	
Ceftizoxime 1 gm	SWI 10 ml	5.5-8	350	
Ceftizoxime 1 gm	NS 100ml	6-8	320	
Ceftizoxime 1-2 gm Frozen	Dextrose 50ml	6.7 - 8.0	270 - 330	
Ceftriaxone 1 - 2 gm	NS 100 ml	6.6-6.7	350	
Ceftriaxone 1 gm	SWI 10 ml	6.6-6.7	423	
Ceftriaxone 1-2gm Frozen	Dextrose 50ml	6.2 - 6.9	270 - 330	
Cefuroxime 0.75 - 1.5g	NS 100 ml	6-8-5	~300	
Cefuroxime 1.5 gm Frozen	Dextrose 50ml	5.2 - 5.8	270 - 330	
Cefuroxime 1gm	SWI 10ml	6-8.5	357	

Drug	Diluent	рН	mOsmol/L	Phlebitis*
Cefuroxime 750mg Frozen	Dextrose 50ml	5.2 - 5.8	270 - 330	
Chloramphenicol 1 gm	SWI 10 ml	6.4-7	344	
Chloramphenicol 1 gm	NS 100 ml	6.4-7	330	
Cidofovir	NS 100ml	7.4	~300	
Cimetidine	NS 50ml	3.8 - 6	314	
Ciprofloxacin 200 mg	D5W 100 ml	3.3-4.6	285	yes
Ciprofloxacin 400 mg	D5W 200 ml	3.3-4.6	285	ves
Cisplatin	NS 0.05 - 2mg/ml	3.5 - 6	~300	
Cladrabine	NS 500 ml	5.7 - 8	~300	yes
Clindamycin 600 mg	NS 100 ml	6.3 (5.5-7)	294	
Clindamycin 900 mg	NS 100 ml	6.3 (5.5-7)	294	
Cyclophophamide	NS 250ml	6.9 (3 - 7.5)	~300	
Cytarabine	NS @ 100mg/ml	5 (4-6)	~300	
Dacabarzine	10mg/ml SWI	3 - 4	109	
Dacarbazine	NS 250 ml	3 - 4	~300	
Daclizumab 5mg/ml	NS 50 ml	6.9	~300	
Dactinomycin	SW 0.5 mg/ml	5.5 - 7	189	
Dactinomycin	NS or D5W 50 ml	5.5 - 7	~300	
Daunorubicin HCl	NS 15ml	4.5 - 6.5	~300	
Daunorubicin HCl	NS 100ml	4.5 - 6.5	~300	
Deferoxamine	SW @ 250mg/ml	4 - 6		
Devrazovane	NS @ 5mg/ml	35-55		Ves
Dextrose 10%	NA	40(3-65)	505	yes
Dextrose 5%	NA	40(3-65)	252	
Dextrose 5% Sod Chl 0 45%	NA	4.0(3-6.5)	406	
Dextrose 5% Sod Chl 0 45%+KCl 20mEq	NA	40(3-65)	447	
Dextrose 5% Sod Chl 0 45%+KCl 40mEq	NA	4.0(3-6.5)	487	
Dextrose 5% Sod Chi 0.9%	NA	4.0(3-6.5)	560	
Dobutamine HCI	NS @ 4mg/ml	35(25-55)	280	VAS
Docetaxel	NS 0 3-0 9mg/ml	5.5 (2.5 5.5)	200	Ves
Dolasetron	SW/@ 20mg/ml	32-38	285	ves
		3 3(2 5-4 5)	205	ves
Doyurohucin	SW 2 mg/ml	25-45	280	yes
Doxurobucin		2.5-4.5	200	
		5.8-0.5		
		10.5	210	
Englandiat		1.8-3.3 6 F 7 F	310	
	SW 2mg/ml	2.0		
Epirubicin - Ellence	SW 2mg/ml	5.0		
Epitubicii - Phannoi ubicii		4-5.5	201	Ves
Engthromycin 300 mg		7(0.5 - 7.7)	291	yes
Etoposido		7(0.5 - 7.7)	290	yes
Etoposide aborabata	NS 10mg/ml	3-4	~200	yes
Ecoposide priospriate		5-4	290	yes
		3-5.0	290	
		4-5.5	300	
	NS 50 ml	4 - 8	315	
Fludorabino		4-0	313	
		7.2 - 8.2	352	
	Svv @ 50mg/ml	9.2	65U	1/00
	Svv @ 24mg/ml	7.4	2/1	yes
Fosprienytoin	INS @1.5-25PE/MI	8.6 - 9		yes
Ganciclovir < 500 mg		11.0	320	yes
Gatifloxacin	D5W 10mg/ml	3.5 - 5.5		yes
	INS 40mg/ml	2.7-3.3	200 - <del>2</del> -	
Gentamicin 100 - 250 mg	NS 100 ml	3-5.5	280 - 290	

GranistronSW Ing/ml4.7.7.329.0Hemin for injectionSW 9 mg/ml8.9.5?30.0YesHeparin sodium (Fremix NS)25,000 u/250/ml7.6.828.334?30.0Heparin sodium (Fremix NS)25,000 u/250/ml7.6.830.0?30.0HydronorphoneSW 950mg/ml7.8.836.0?30.0HydromorphoneSW 950mg/ml4.5.5.7.33.3?30.0HydromorphoneSW 200mg/ml6.5.7.5.31.0YesIniglaceraseNS 200mts/ml6.5.7.5.31.0YesIniglaceraseNS 200mts/ml7.2~30.0?30.0IniglaceraseSS 20mts/ml6.5.7.5.31.0YesInitizamaoNS 60.4mg/ml7.2~30.0?30.0InitizamaoSS 650mg/ml3.8.8?20.0yesIron Dextran IntravenousNS 60.1mg/ml3.8.8?20.0yesIron Dextran IntravenousNS 60.1mg/ml3.8.5.8.22.0yesIraconatolNS 50mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yesIraconatolNS 60.1mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yesIraconatolSS 65mg/ml3.8.5.8.22.0yes </th <th>Drug</th> <th>Diluent</th> <th>рН</th> <th>mOsmol/L</th> <th>Phlebitis*</th>	Drug	Diluent	рН	mOsmol/L	Phlebitis*
Hem/in fujection         SW @ 7mg/ml         8 = 5.5         ~300         yes           Hsparin sodium (Premix DS)         35,000 u/250 ml         5.5 (5 - 6)         288         324           Heparin sodium (Premix DS)         25,000 u/250 ml         7.6 (- 8)         322         324           Heparin sodium (Premix DS)         25,000 u/250 ml         7.6 (- 8)         322         324           Hydrocortione         SW 050mg/ml         7.8         360         2           Hydrocortione         SW 050mg/ml         4.5 (- 8)         323         3           Idiafunide         Ns 900s/2011         6.1         1         1           Indiguerase         NS 20 unity/ml         6.1         1         1           Indiguerase         NS 95 Smg/ml         5.2 - 6.5         2000         yes           Indiguerase         NS 95 Smg/ml         5.2 - 6.5         2000         yes           Intervenous immunoglobulins         38 to 12%         1.2 - 2.5         9.0         yes           Intervenous immunoglobulins         SW 10mg/ml         5.2 - 6.5         2000         yes           Uscoloratin intravenous         NS 95 Smg/ml         5.8 - 5.0         yes           Uscoloratinit intoreons         SW 10mg/ml	Granisetron	SW 1mg/ml	4.7 - 7.3	290	
Heparin sodum         N 100 unit/ml         S - 8         283-384           Heparin sodum (Premix NS)         25,000 u /250 ml         7.6 - 8         322           Hydrocordsone         SW Ø SOmg/ml         7.6 - 8         322           Hydrocordsone         SW Ø SOmg/ml         7.6 - 8         360           Hydrocordsone         SW Ø SOmg/ml         4.5 - 5         333           Hardsone         NS Ø Somg/ml         6.1         -           Inframide         NS Ø Somg/ml         6.1         -           Imiglacerase         NS Ø Somg/ml         6.5 - 7.5         310         yes           Intravenous inmunoglobulins         3% to 12%         4 - 7.2         -300         -           Intravenous inmunoglobulins         SK Ø D.121.1mg/ml         3.3 8         -         yes           Itoro Dextran. Intravenous         NS Ø O.107/ml         3.8 8         -         Yes           Icocovorin         SW JOng/ml         4.8         -         yes           Itacaonazole         NS Ø Somg/ml         3.8 - 6         300         Yes           Uscolovin         SW Somg/ml         3.8 - 6         300         Yes           Uscolovin         SW Somg/ml         3.8 - 6         300	Hemin for injection	SW @ 7mg/ml	8 - 9.5	~300	yes
Heparin sodium (Premix NS)         25,000 u /230 /ml         7.6         3         322           Heparin sodium (Premix NS)         25,000 u /230 /ml         7.8         360         322           Hydrocortisone         SW 10mg/ml         4.5.5         -333         3           Hydrocortisone         SW 10mg/ml         6.5         -333         -           Intradicin         Img/ml         6.1         -         -           Intiguencrase         NS 20 units/ml         6.1         -         -           Intravenous immungobulins         Sig 0.112/st         4.7.2         -300         -           Intravenous immungobulins         Sig 0.112/st         4.7.2         -300         -         -           Iron Dextran Intravenous         NS @ 0.121/st         3.8         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -         -	Heparin sodium	NS 1000 units/ml	5 - 8	283-384	
Heparin sodium (Premix NS)         25,000 u/250/ml         7 (6 - 8)         322           Hydrecorothsone         SW @ 50mg/ml         4 - 5.5         330           Hydrecorothsone         SW W 10mg/ml         4 - 5.5         333           Haranide         Ns@0.6 20mg/ml         6.1         1           Insignucerase         NS 20 units/ml         6.1         1           Imigenerase         NS 20 units/ml         6.5.7.5         310         Yes           Intravenous immunoglobulins         3% to 12%         4 - 7.2         "300         1           Intravenous immunoglobulins         3% to 12%         4 - 7.2         "300         1           Irintoccan         DS @ 0.101/ml         3 - 8.5         2000         yes           Iron Dextran Intravenous         NS @ 0.1mg/ml         4.8         200         1           Lecofoxin         SW 100ml         3.8 - 5.8         "250         yes           Lecofoxin         SW 100ml         3.8 - 5.8         "250         yes           Lecofoxin         SW 100ml         3.8 - 5.8         "250         yes           Lecofoxin         SW 100ml         3.8 - 5.8         "310         yes           Lecofoloxacin 500 mg         DSW 100ml	Heparin sodium (Premix D5)	25,000 u /250 ml	5.5 (5 - 6)	298	
Hydracartisone         SW Ø Song/ml         7 - 8         360           Hydracortisone         SW 10mg/ml         4 - 5.5         -333           Hydracortisone         SW 20mg/ml         6.         -           Ifosfamide         NS@0.5 Zong/ml         6.1         -           Imigeneru/Cilastin         NS @ 5 Song/ml         6.5.7.5         310         Yes           Infisimab         NS@0.4 Amg/ml         6.5.7.5         310         Yes           Infisimab         NS@0.4 Amg/ml         6.5.7.5         300         -           Intravenous inmunoglobulins         3% to 12%         4.7.2         -300         -           Irino Dextra Intravenous         NS @ 0.1mg/ml         5.2.6.5         2000         yes           Iron Dextra Intravenous         NS @ 0.1mg/ml         4.8         20         -           Iron Dextra Intravenous         NS @ 0.1mg/ml         3.8.5.8         -250         yes           Lexotoxin         Song         DSW 100 ml         3.8.5.8         -250         yes           Lexotoxin         Song         DSW 100 ml         3.8.5.8         -250         yes           Lexofoxacin Song         DSW 100 ml         7.6 (6.8.5)         311         415	Heparin sodium (Premix NS)	25,000 u /250 /ml	7 (6 – 8)	322	
hydromsphone         SW 10mg/ml         4 - 5.5         "333           idarubicin         1 mg/ml         3.5         I           infiguecrase         NS 20 units/ml         6         I           imiguecrase         NS 20 units/ml         6.1         I           imiguecrase         NS 20 units/ml         6.5 -7.5         310         Yes           infiximab         NS 00.4-4mg/ml         7.2         "300         I           incracenous immunoglobulins         3% to 12%         4 - 7.2         "300         I           incracenari         DSW 00.22.11mg/ml         3.3 - 8         I         I/ms           incracenari         DSW 00.01         3.8 - 5.8         '200         yes           incracenari         DSW 100 ml         3.8 - 5.8         '250         yes           iuccorini         SW 100 ml         3.8 - 5.6         302         I           iuccorini         SW 50mg/ml         3.5 - 6         302         I <td>Hydrocortisone</td> <td>SW @ 50mg/ml</td> <td>7 - 8</td> <td>360</td> <td></td>	Hydrocortisone	SW @ 50mg/ml	7 - 8	360	
darubicin         1 mg/ml         3.5         Imageneration           ifosfamide         NS@0.ac>20mg/ml         6.1         Imigeneration           Imigeneration         NS @ strong/ml         6.1         Imigeneration           Imigeneration         NS @ Smg/ml         6.5-7.5         310         Yes           Infliximab         NS @ Somg/ml         7.2         7300         Imitareenous         Imigeneration         Yes           Infliximab         NS @ 0.12r.11mg/ml         3.3.8         Imitareenous         Yes         Yes           Irron Dextran Intravenous         NS @ Somg/ml         5.2 - 6.5         2000         Yes           Irron Dextran Intravenous         NS @ Somg/ml         4.8         Imitareenous         Yes           Leucovorin         SW 30mg/ml         8.1         274         Imitareenous           Leucovorin         SW 30mg/ml         3.5 -6         302         Imitareenous           Meropacenem         NS @ Song/ml         3.5 -6         302         Imitareenous         Yes           Meropacenem         NS @ Song/ml         7.6 (6.8.5)         371 -415         Yes           Methicilin 1gm         SW 10 ml         7.6 (6.8.5)         371 -415         Yes           Meth	Hydromorphone	SW 10mg/ml	4 - 5.5	~333	
fisdsmide         NS@0.6.20mg/ml         6         Image           imiguecrase         NS 20 units/ml         6.1         Image           imiguecrase         NS 20 units/ml         6.1         Z           infismab         NS@0.4-4mg/ml         7.2         7300         Image           infismab         NS@0.12.1.1mg/ml         3.3.8         Image         Image           intravenous immunoglobulins         3% to 12%         4.7.2         7300         Image           intravenous immunoglobulins         NS@ 50mg/ml         5.2 - 6.5         2000         yes           itraconazole         NS 3.3mg/ml         4.8         Yes         Yes           itraconazole         NS 3.3mg/ml         8.8         -7250         yes           itraconazole         NS 3.3mg/ml         3.8 -5.8         -7250         yes           itraconazole         DSW 100 ml         3.8 -5.8         -7250         yes           itraconazole         DSW 50mg/ml         3.5 -6         300         Image           itraconazole         DSW 50mg/ml         7.3 -8.3         7-300         Yes           itraconazole         NS @ 5mg/ml         7.4 -5         301         Yes           Meperidine         SW	Idarubicin	1 mg/ml	3.5		
Insiguearase         NS 20 units/ml         6.1         F           Imipenem/Clastatin         NS @ Sng/ml         6.5.7.5         31.0         Yes           Intravenous immunoglobulins         3% to 12%         4 - 7.2         -300	Ifosfamide	NS@0.6-20mg/ml	6		
mipenem/clastatin         NS @ Smg/ml         6.5.7.5         310         yes           Inflixmab         NS@0.4-4mg/ml         7.2         ~300            Inflixmab         NS@0.4-4mg/ml         7.2         ~300            Intravenous inmunoglobulins         3K to 12%         4.7.2         ~300            Irinotecan         DSW @ 0.12-1.1mg/ml         33.8             Irino Dextran Intravenous         NS@ 0.1mg/ml         5.26.5         2000         yes           Iraconazole         NS 3.3mg/ml         4.8         274         yes           Leucovorin         SW 100mg/ml         3.8.5.8         ~250         yes           Leucovorin         SW 50mg/ml         3.56         302            Merpenem         NS @ Smg/ml         7.38.3         ~300         yes           Unerolid         Dextrose 2mg/ml         4.8         290            Methofilin 1 gm         SW 100 ml         7.6 (6-8.5)         510         yes           Methofreate         SW @ 25 mg/ml         4.5 -6.5         280            Methofreato         SW @ 5 mg/ml         4.5 -6.5         280 <t< td=""><td>Imiglucerase</td><td>NS 20 units/ml</td><td>6.1</td><td></td><td></td></t<>	Imiglucerase	NS 20 units/ml	6.1		
Inflaximab         NS@0.4-4mg/ml         7.2         ~300           Intravenous immunoglobulins         3k to 12%         4 - 7.2         ~300           Intravenous immunoglobulins         3k to 12%         4 - 7.2         ~300           Iron Dextran Intravenous         NS @ 50mg/ml         5.2 - 6.5         2000         yes           Iron Dextran Intravenous         NS @ 0.1mg/ml         5.2 - 6.5         2000         yes           Itraconazole         NS 3.3mg/ml         4.8	Imipenem/cilastatin	NS @ 5mg/ml	6.5-7.5	310	yes
Intravenous immunoglobulins         3% to 12%         4 - 7.2         "300           irrinotecan         DSW 00.12.1.mg/ml         3 - 3.8            irrinotecan         NS 00 0.1mg/ml         5.2 - 6.5         2000         yes           iron Dextran Intravenous         NS 00 0.1mg/ml         5.2 - 6.5         2000         yes           iron Dextran Intravenous         NS 00 0.1mg/ml         8.1         274            ieucovorin         SW 100 ml         3.8 - 5.8         ~250         yes           ieucoloxacin 500 mg         DSW 500 ml         3.8 - 5.8         ~250         yes           ieucolid         Dextrose 2mg/ml         4.8         290            Meepridine         SW 50mg/ml         3.5 - 6         302            Meepridine         SW 50mg/ml         7.3 - 6.3         301            Methicillin 1gm         SW 100 ml         7.6 (6-8.5)         371 - 415         yes           Methicillin 2 agm         100 ml NS         7.6 (6-8.5)         371 - 415         yes           Methicillin 1gm         DSW 2050mg/ml         7.7         310            Methylpredinsione 1gm         DSW 2050mg/ml         7.7         310	Infliximab	NS@0.4-4mg/ml	7.2	~300	
Irino Extran Intravenous         DSW @ 0.12.1.1mg/ml         3.3.8         Permission           Iron Dextran Intravenous         NS @ 0.1mg/ml         5.2 - 6.5         Q000         yes           Iron Dextran Intravenous         NS @ 0.1mg/ml         5.2 - 6.5         Yes         yes           Itraconazole         NS 3.3mg/ml         4.8         Yes         Yes           Leucovorin         SW 10mg/ml         3.8.5.8         -7250         Yes           Leucovorin         SW 10mg/ml         3.8.5.8         -7250         Yes           Linexolid         Dextrose 2mg/ml         4.8         290         Yes           Mepoenem         NS @ Smg/ml         3.5 - 6         302         Yes           Meropenem         NS @ Smg/ml         7.6 (6-8.5)         51.0         Yes           Methcillin 1g         SW 0 25 mg/ml         8.5         "300         Yes           Methotreate         SW @ 25 mg/ml         8.5         280         Yes           Methotreate         SW @ 25 mg/ml         4.5 - 6.5         280         Yes           Methotreate         SW @ 25 mg/ml         4.5 - 6.5         280         Yes           Methotranide         NS @ 12 mg/ml         4.5 - 6.5         280	Intravenous immunoglobulins	3% to 12%	4 - 7.2	~300	
Iron Dextran Intravenous         NS @ 50mg/ml         5.2 - 6.5         2000         yes           Iron Dextran Intravenous         NS @ 0.1mg/ml         4.8         yes           Itraconazole         NS 3.3mg/ml         4.8         274           Itraconazole         DSW 10mg/ml         8.1         274           Levofloxacin 250 mg         DSW 50 ml         3.8-5.8         -7250         yes           Levofloxacin 500 mg         DSW 100 ml         3.8-5.8         -7250         yes           Levofloxacin 500 mg         DSW 50 ml         3.8-5.8         -7250         yes           Imezolid         Dextrose Zmg/ml         4.8         290	Irinotecan	D5W @ 0.12-1.1mg/ml	3 -3.8		
Iron Dextran Intravenous         NS @ 0.1mg/ml         5.2 - 6.5         yes           Itraconazole         NS 3.3mg/ml         4.8         Yes           Leucovorin         SW 10mg/ml         8.1         274           Levofloxacin 500 mg         DSW 50 ml         3.8-5.8         ~250         yes           Levofloxacin 500 mg         DSW 50 ml         3.8-5.8         ~250         yes           Levofloxacin 500 mg         DSW 50 ml         3.8-5.8         ~200         Yes           Meperdine         SW 50mg/ml         3.5 - 6         302         Yes           Methicillin 1 gm         SW 100 ml         7.3 - 8.3         ~300         Yes           Methicillin 2 a gm         100 ml NS         7.6 (6-8.5)         371 - 415         Yes           Methicillin 2 a gm         100 ml NS         7.6 (6-8.5)         371 - 415         Yes           Methotrevate         SW 02 Smg/ml         8.6 - 5.5         280         -           Methotignedinsolene 1 gm         DSW 250ml         7 - 8         319         -           Metoclopramide         NS 0.9 Smg/ml         4.4         285         -           Mitoxopcine         NS 0.0 2.mg/ml         3.4 - 5         300         - <td< td=""><td>Iron Dextran Intravenous</td><td>NS @ 50mg/ml</td><td>5.2 - 6.5</td><td>2000</td><td>yes</td></td<>	Iron Dextran Intravenous	NS @ 50mg/ml	5.2 - 6.5	2000	yes
Itraconazole         NS 3.3mg/ml         4.8         yes           Leucovorin         SVI 01mg/ml         8.1         274         Iterveloculu           Levofloxacin 250 mg         D5W 50 ml         3.8-5.8         "250         yes           Levofloxacin 500 mg         D5W 50 ml         3.8-5.8         "250         yes           Levofloxacin 500 mg         D5W 50 ml         3.8-5.8         "250         yes           Levofloxacin 500 mg         D5W 50 mg/ml         3.5 - 6         302         "           Meporeline         SW 50mg/ml         7.3 - 8.3         "300         yes           Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         371 - 415         yes           Methylprednisolone 500 mg         D5W 100 ml         7 - 8         319         -           Methylprednisolone 1gm         D5W 250ml         7 - 8         319         -           Metoclopramide         NS @ 5mg/ml         4.4         285         -           Metoclopramide         NS @ 0.5mg/ml         3.2 - 4         -         -           Minocycline         NS@ 0.2mg/ml         3.2 - 4         -         -           Minocycline         NS @ 0.2mg/ml         3.4.5         "300         - </td <td>Iron Dextran Intravenous</td> <td>NS @ 0.1mg/ml</td> <td>5.2 - 6.5</td> <td></td> <td>yes</td>	Iron Dextran Intravenous	NS @ 0.1mg/ml	5.2 - 6.5		yes
Leucovorin         SW 10mg/ml         8.1         274           Levofloxacin 250 mg         DSW 50 ml         3.8-5.8         ~250         yes           Levofloxacin 500 mg         DSW 100 ml         3.8-5.8         ~250         yes           Linezolid         Dextrose 2mg/ml         4.8         290	Itraconazole	NS 3.3mg/ml	4.8		yes
Levofloxacin 250 mg         DSW 50 ml         3.8-5.8         ~250         yes           Levofloxacin 500 mg         DSW 100 ml         3.8-5.8         ~250         yes           Linezolid         Dextrose 2mg/ml         4.8         290	Leucovorin	SW 10mg/ml	8.1	274	
Levofloxacin 500 mg         DSW 100 ml         3.8-5.8         ~250         yes           Linezolid         Dextrose 2mg/ml         4.8         290	Levofloxacin 250 mg	D5W 50 ml	3.8-5.8	~250	yes
Linezolid         Dextrose 2mg/ml         4.8         290           Meperdine         SW 50mg/ml         3.5 - 6         302           Meropenem         NS @ 5mg/ml         7.3 - 8.3         ~300 <b>yes</b> Methicillin 1g m         SW 10 ml         7.6 (6-8.5)         \$101         yes           Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         \$171 - 415 <b>yes</b> Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         \$171 - 415 <b>yes</b> Methylpredinsolone 500 mg         D5W 250nl         7 - 8         319	Levofloxacin 500 mg	D5W 100 ml	3.8-5.8	~250	yes
Meperidine         SW 50mg/ml         3.5 - 6         302           Meropenem         NS @ 5mg/ml         7.3 - 8.3         ~300         yes           Methicillin 1g m         SWI 10 ml         7.6 (6-8.5)         S10         yes           Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         371 - 415         yes           Methylprednisolone 500 mg         D5W100 ml         7 - 8         301	Linezolid	Dextrose 2mg/ml	4.8	290	,
Maropenem         NS @ 5mg/ml         7.3 - 8.3         ~300         Yes           Methicillin 1 gm         SWI 10 ml         7.6 (6-8.5)         510         yes           Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         371 - 415         Yes           Methorexate         SW @ 25 mg/ml         8.5         ~300	Meperidine	SW 50mg/ml	3.5 - 6	302	
Methicillin 1 gm         SW 10 ml         7.6 (6-8.5)         510         yes           Methicillin 2-3 gm         100 ml NS         7.6 (6-8.5)         371 - 415         yes           Methylpredinsolone 300 mg         DSW 100 ml         78         301	Meropenem	NS @ 5mg/ml	7.3 - 8.3	~300	ves
Methicilin 2-3 gm         100 ml NS         7.6 (6-8.5)         371 - 415         Yes           Methylprediisolone 500 mg         D5W100 ml         7 - 8         301	Methicillin 1 gm	SWI 10 ml	7.6 (6-8.5)	510	ves
Methotrexate         SW @ 25 mg/ml         8.5         ~300           Methylpredinsolone 500 mg         D5W100 ml         7 - 8         301           Methylpredinsolone 1 gm         D5W 250ml         7 - 8         319           Metoclopramide         SW @ 5mg/ml         4.5 - 6.5         280           Metocolopramide         NS @ 1.25mg/ml         4.4         285           Metonidazole         NS @ 5mg/ml         5 - 7         310           Milimone         D5W 200mcg/ml         3.2 - 4            Minocycline         NS @0.1-0.2mg/ml         2 - 2.8         ~300           Mitoxantrone         NS @ 0.5mg/ml         6 - 8         9           Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Nafcillin 1 - 3 gm         NS 100 ml         6 - 8.5         361 - 398         yes           Nicardipine         NS @ 0.1mg/ml         3.4.5         ~300            Octreotide         SW @ 0.5mg/ml         3.8 - 5.8         252            Odasetron         DSW @ 4mg/ml         3.8 - 5.8         252            Odasetron         DSW @ 2.9mg/S0ml         3.3 - 4         270            Oxacillin 1 gm<	Methicillin 2- 3 gm	100 ml NS	7.6 (6-8.5)	371 - 415	ves
Methylprednisolone 500 mg         DSW 100 ml         7 · 8         301           Methylprednisolone 1 gm         DSW 250ml         7 · 8         319	Methotrexate	SW @ 25 mg/ml	8.5	~300	,
Methylprednisolone 1 gm         DSW 250ml         7 - 8         319           Metoclopramide         SW @ Smg/ml         4.5 - 6.5         280	Methylpredinsolone 500 mg	D5W100 ml	7 - 8	301	
Netoclopramide         SW @ 5mg/ml         4.5 - 6.5         280           Metoclopramide         NS @ 1.25mg/ml         4.4         285           Metronidazole         NS @ 5mg/ml         5 - 7         310           Milorycline         DSW 200mcg/ml         3.2 - 4	Methylprednisolone 1 gm	D5W 250ml	7 - 8	319	
Metoclopramide         NS @ 1.25mg/ml         4.4         285           Metronidazole         NS @ 5mg/ml         5 - 7         310	Metoclopramide	SW @ 5mg/ml	4.5 - 6.5	280	
NS @ Smg/ml         5 - 7         310           Mitrinone         DSW 200mcg/ml         3.2 - 4            Minocycline         NS @ Smg/ml         2 - 2.8         ~300            Mitomycin         SW @ 0.5mg/ml         6 - 8         9            Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Morphine Sulfate         NS 10mg/ml         4 (2.5 - 6.0)         295         yes           Morphine Sulfate         NS 100 ml         6 - 8.5         361 - 398         yes           Nafcillin 1 - 3 gm         NS 100 ml         6 - 7.7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.5         ~300            Octreotide         SW @ 0.5mg/ml         3.9 - 4.5         279            Ofdoxacin         DSW 20mg/Soml         3.3 - 4         270            Oxacillin 1 gm         SWI 10 ml         6 - 8.5         321 - 356         yes           Oxacillin 1 - 2 gm         NS 100 ml         6 - 8.7.2         270 - 324         yes           Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6 - 8.7.2         270 - 324         yes           Oxacillin 1 - 2 gm	Metoclopramide	NS @ 1.25mg/ml	4.4	285	
Interview         DSU 200mcg/ml         3.2 - 4           Milrinone         DSW 200mcg/ml         3.2 - 4           Minocycline         NS@0.1-0.2mg/ml         2 - 2.8         ~300           Mitomycin         SW @ 0.5mg/ml         6 - 8         9           Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Morphine Sulfate         NS 100ml         4 (2.5 - 6.0)         295         yes           Nafcillin 1 - 3 gm         NS 100 ml         6 - 8.5         361 - 398         yes           Nafcillin 1 - 2 gm Frozen         Dextrose 50ml         6.7 - 7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.9 - 4.5         279            Oftoxacin         DSW @ 4mg/ml         3.8 - 5.8         252            Ondansetron         DSW 32mg/S0ml         3.3 - 4         270            Oxacillin 1 gm         SW 10 ml         6 - 8.5         398         yes           Oxacillin 1 - 2 gm         NS 100 ml         6 - 8.7.2         270 - 324         yes           Oxacillin 1 - 2 gm Frozen         DstW @ 0.3 - 1.2 mg/ml         4.4 - 6.5         Yes           Panidorazole 40mg         NS 00 0ml         6 - 7.	Metronidazole	NS @ 5mg/ml	5 - 7	310	
Ninocycline         NS@0.1-0.2mg/ml         2 - 2.8         ~300           Mitomycin         SW @ 0.5mg/ml         6 - 8         9           Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Morphine Sulfate         NS 10mg/ml         4 (2.5-6.0)         295         yes           Nafcillin 1 - 3 gm         NS 100 ml         6 - 8.5         361 - 398         yes           Nafcillin 1 - 2 gm Frozen         Dextrose 50ml         6.7 - 7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.9 - 4.5         279            Oftoxacin         DSW @ 0.5mg/ml         3.9 - 4.5         279            Ofdoxacin         DSW @ 4mg/ml         3.8 - 5.8         252            Ondansetron         DSW 32mg/50ml         3.3 - 4         270            Oxacillin 1 gm         SW 10 ml         6 - 8.5         398         yes           Oxacillin 1 - 2 gm         NS 100 ml         6 - 8.7.2         270 - 324         yes           Pacitaxel         DSW @ 0.3 - 1.2 mg/ml         4.4 - 6.5          Yes           Pantoprazole 40mg         NS 100ml         9.0 - 10.0         295	Milrinone	D5W 200mcg/ml	3.2 - 4		
Nice of Jane         Jac         Jac         Jac         Jac           Mitomycin         SW @ 0.5mg/ml         6 - 8         9           Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Morphine Sulfate         NS 10mg/ml         4 (2.5-6.0)         295         yes           Nafcillin 1 -3 gm         NS 100 ml         6 -8.5         361 - 398         yes           Nafcillin 1 -2 gm Frozen         Dextrose 50ml         6.7 - 7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.5         ~300	Minocycline	NS@0.1-0.2mg/ml	2 - 2.8	~300	
Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Mitoxantrone         NS @ 0.2mg/ml         3 - 4.5         ~300         yes           Morphine Sulfate         NS 10mg/ml         4 (2.5-6.0)         295         yes           Nafcillin 1 - 3 gm         NS 100 ml         6-8.5         361 - 398         yes           Nafcillin 1-2 gm Frozen         Dextrose 50ml         6.7 - 7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.9 - 4.5         279	Mitomycin	SW @ 0.5mg/ml	6-8	9	
International         International         International         International         International           Morphine Sulfate         NS 100 m/         4 (2.5-6.0)         295         yes           Nafcillin 1 - 3 gm         NS 100 m/         6-8.5         361 - 398         yes           Nafcillin 1 - 2 gm Frozen         Dextrose 50ml         6.7 - 7.2         276 - 324         yes           Nicardipine         NS @ 0.1mg/ml         3.5         ~300	Mitoxantrone	NS @ 0.2mg/ml	3-4.5	~300	ves
Narcial         Nation	Morphine Sulfate	NS 10mg/ml	4 (2.5-6.0)	295	ves
Na comm 1 or gm         No comm	Nafcillin 1 - 3 gm	NS 100 ml	6-8.5	361 - 398	ves
Nicardipine         NS @ 0.1mg/ml         3.5         ~300           Octreotide         SW @0.5mg/ml         3.9 - 4.5         279           Ofloxacin         DSW @ 4mg/ml         3.8 - 5.8         252           Ondansetron         DSW 32mg/50ml         3.3 - 4         270           Oxacillin 1 gm         SWI 10 ml         6-8.5         398 <b>yes</b> Oxacillin 1 gm         SWI 10 ml         6-8.5         321 - 356 <b>yes</b> Oxacillin 1 - 2 gm         NS 100 ml         6-8.5         321 - 356 <b>yes</b> Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Pacitaxel         DSW @ 0.3 - 1.2 mg/ml         4.4 - 6.5         1         1           Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300 <b>yes</b> Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK r Na         NS @ 50units/ml         7 (6-8.5)         420	Nafcillin 1-2 gm Frozen	Dextrose 50ml	6.7 - 7.2	276 - 324	ves
Notice of any prime         Does         Does           Octreotide         SW @0.5mg/ml         3.9 - 4.5         279           Ofloxacin         D5W @ 4mg/ml         3.8 - 5.8         252           Ondansetron         D5W 32mg/50ml         3.3 - 4         270           Oxacillin 1 gm         SWI 10 ml         6-8.5         398 <b>yes</b> Oxacillin 1 - 2 gm         NS 100 ml         6-8.5         321 - 356 <b>yes</b> Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Paclitaxel         D5W @ 0.3 - 1.2 mg/ml         4.4 - 6.5             Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300 <b>yes</b> Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420 <td>Nicardipine</td> <td>NS @ 0.1mg/ml</td> <td>3.5</td> <td>~300</td> <td>700</td>	Nicardipine	NS @ 0.1mg/ml	3.5	~300	700
Drive Grang, Mark         Drive Grang, Mark         Drive Grang, Mark         Drive Grang, Mark           Ofloxacin         D5W @ 4mg/ml         3.8 - 5.8         252           Ondansetron         D5W 32mg/50ml         3.3 - 4         270           Oxacillin 1 gm         SWI 10 ml         6-8.5         398 <b>yes</b> Oxacillin 1 - 2 gm         NS 100 ml         6-8.5         321 - 356 <b>yes</b> Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Paclitaxel         D5W @ 0.3-1.2 mg/ml         4.4 - 6.5	Octreotide	SW @0.5mg/ml	3.9 - 4.5	279	
DSW @ Mg/M         DSW @ Mg/M <thdsw @="" m<="" mg="" th="">         DSW @ Mg/M         DSW @ Mg</thdsw>	Ofloxacin	D5W @ 4mg/ml	3.8 - 5.8	252	
Oxacillin 1 gm         SWI 10 ml         6-8.5         398         yes           Oxacillin 1 - 2 gm         NS 100 ml         6-8.5         321 - 356         yes           Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Paclitaxel         D5W @ 0.3-1.2 mg/ml         4.4 - 6.5             Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300         yes           Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Pentamidine IVPB         D5W @ < 3mg/ml	Ondansetron	D5W 32mg/50ml	3.3 - 4	270	
Oxacillin 1 - 2 gm         NS 100 ml         6-8.5         321 - 356         yes           Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Paclitaxel         D5W @ 0.3-1.2 mg/ml         4.4 - 6.5             Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300         yes           Pantoprazole 40mg         NS 100ml         9.0-10.0         295            Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Pentamidine IVPB         D5W @ < 3mg/ml	Oxacillin 1 gm	SWI 10 ml	6-8.5	398	ves
Oxacillin 1 - 2 gm Frozen         Dextrose 50ml         6.8 - 7.2         270 - 324         yes           Paclitaxel         D5W @ 0.3-1.2 mg/ml         4.4 - 6.5             Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300         yes           Pantoprazole 40mg         NS 100ml         9.0-10.0         295            Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Pentamidine IVPB         D5W @ < 3mg/ml	Oxacillin 1 - 2 gm	NS 100 ml	6-8.5	321 - 356	ves
Pacificación P gin recent         DSW @ 0.3-1.2 mg/ml         4.4 - 6.5         recent           Panidronate         NS @ 0.09mg/ml         6 - 7.4         ~300 <b>yes</b> Pantoprazole 40mg         NS 100ml         9.0-10.0         295            Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Pentamidine IVPB         D5W @ < 3mg/ml	Oxacillin 1- 2 gm Frozen	Dextrose 50ml	68-72	270 - 324	ves
Pamidronate         NS @ 0.09mg/ml         6 - 7.4         ~300         yes           Pantoprazole 40mg         NS 100ml         9.0-10.0         295            Parenteral Nutrition         Amino acids-dextrose-fat         5.5         >600         yes           Parenteral Nutrition         Amino acids-dextrose         5.3 - 6.3         >800         yes           Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324            Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420            Pentamidine IVPB         D5W @ < 3mg/ml	Paclitavel	D5W @ 0.3-1.2 mg/ml	44-65	270 321	yes
Pantoprazole 40mgNS 100ml9.0-10.0295Parenteral NutritionAmino acids-dextrose-fat5.5>600yesParenteral NutritionAmino acids-dextrose5.3 - 6.3>800yesPenicillin GK 1-3 MU FrozenDextrose 50ml6.8 - 7.2276 - 324Penicillin GK or NaNS @ 50units/ml7 (6-8.5)420Pentamidine IVPBD5W @ < 3mg/ml	Pamidronate	NS @ 0.09mg/ml	6-74	~300	ves
Parenteral NutritionAmino acids-dextrose-fat5.5>600yesParenteral NutritionAmino acids-dextrose5.3 - 6.3>800yesPenicillin GK 1-3 MU FrozenDextrose 50ml6.8 - 7.2276 - 324Penicillin GK or NaNS @ 50units/ml7 (6-8.5)420Pentamidine IVPBD5W @ < 3mg/ml	Pantoprazole 40mg	NS 100ml	9,0-10,0	295	,
Parenterial NutritionAmino acids decirids entries5.5>0000yesParenteral NutritionAmino acids decirids entries5.3 - 6.3>800yesPenicillin GK 1-3 MU FrozenDextrose 50ml6.8 - 7.2276 - 324Penicillin GK or NaNS @ 50units/ml7 (6-8.5)420Pentamidine IVPBD5W @ < 3mg/ml	Parenteral Nutrition	Amino acids-devtrose-fat	5.5	>600	VAS
Penicillin GK 1-3 MU Frozen         Dextrose 50ml         6.8 - 7.2         276 - 324           Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420           Pentamidine IVPB         D5W @ < 3mg/ml	Parenteral Nutrition	Amino acids-dextrose	53-63	>800	Ves
Penicillin GK or Na         NS @ 50units/ml         7 (6-8.5)         420           Pentamidine IVPB         D5W @ < 3mg/ml	Penicillin GK 1-3 MU Frozen	Dextrose 50ml	68-72	276 - 324	yes
Pentamidine IVPB         D5W @ < 3mg/ml         4 - 4.4         455         yes           Phenytoin         NS @ 5mg/ml         12         312         yes	Penicillin GK or Na	NS @ 50unite/ml	7 (6-8 5)	270-324 //20	
Phenytoin         NS @ 5mg/ml         12         312         yes	Pentamidine IVPR		Λ _ Λ Λ	420	VAC
	Phenytoin	NS @ 5mg/ml		212	yes
Piperacillin SWI @ 163mg/ml 5 5-7 5 439	Piperacillin	SWI @ 163mg/ml	5.5-75	439	yes

Drug	Diluent	рН	mOsmol/L	Phlebitis*
Piperacillin	NS @ 40mg/ml	5.5-7.5	404	1
Piperacillin/tazobactam 2.25-4.5gm Frozn	Dextrose 50ml	6.2 - 6.7	270 - 330	
Piperacillin/tazobactam 3.375 gm	NS 100 ml	5.1-5.4	445	
Plicamycin	NS 1000ml	7.0	~300	
Potassium chloride premix	0.4 mEq/ml	5.0	800	yes
Potassium chloride premix	0.3 mEq/ml	5.0	600	yes
Potassium chloride premix	0.2 mEq/ml	5.0	400	
Potassium chloride premix	0.1 mEq/ml	5.0	200	
Quinupristin-dalfopristin	D5W @ 2mg/ml	4.5 - 5		yes
Ranitidine 50mg	NS 50ml	6.7 - 7.3	302	
Rifampin < 600 mg	D5W 100 ml	7.8-8.8	1	
Rituximab	NS or D5W 1 - 4 mg/ml	6.5	1	
Sargramostim	NS @ 10mcg/ml	7.1 - 7.7	~300	
Sodium Chloride 0.45%	NA	5.0 (4.5 – 7.0)	154	
Sodium Chloride 0.9%	NA	5.0 (4.5 – 7.0)	308	
Streptozosin	D5W 100mg/ml	3.5 - 4.5	<u> </u>	
Sulfamethoxazole/Trimethoprim 80&400/5ml	D5W 100ml	10	541	yes
Teniposide	NS @ 0.4mg/ml	5 (4 - 6.5)	-	1-
Thiotepa	NS @ 1mg/ml	5.5 - 7.5	269	
Ticarcillin 3 gm	NS 100 ml	6 - 8	442	<u> </u>
Ticarcillin/clavulanate 3.1gm	SW @ 86mg/ml	6 - 8	573	
Ticarcillin/clavulanate 3.1gm	NS 100 ml	5.5-7.5	450	
Ticarcillin/clavulanate 3.1gm Frozen	Dextrose 50ml	6.8 - 7.2	265 - 305	
Tobramycin 100 - 250 mg	NS 100 ml	3-6.5	290	
Topotecan	D5W 50ml	2.5 - 3.5	+	
Trastuzumab	NS 250 ml	6	~300	<u> </u>
Trimetrexate	D5W@ 0.25-2mg/ml	3.5 - 5.5	+	<b> </b>
Vancomycin 1.5 gm	NS 250 ml	2.5-4.5	~300	
Vancomycin 1-1.25gm	NS 250 ml	2.5-4.5	290	
Vancomycin 500mg	NS 100 ml	2.5-4.5	291	
Vancomycin 1 gm Frozen	Dextrose 200ml	3.5 - 4.3	266 - 302	ł
Vancomvcin 500mg Frozen	Dextrose 100ml	3.5 - 4.3	266 - 302	łi
Vinblastine	NS 1mg/ml	3.5 - 5	278	ł
Vincristine	SW 1mg/ml	3.5 - 5.5	610	
Vindesine	NS 1mg/ml	4.2 - 4.5		<del> </del>
Vinorelbine	D5W@1.5-3mg/ml	3.5	<del> </del>	ves
Zidovudine	D5W @ 4mg/m	5.5	~260	ves
	0.000 @ 0000/000			,
*Phlebitis means the drug produces phlebitis when	the pH and osmolarity are accept:	able	 	I T
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