GUIDE TO DILUTION AND ADMINISTRATION OF IV MEDICATIONS

ACYCLOVIR

Administration:

IV infusion by a syringe pump over 1 hour

Compatible with D5W - NS - D10W

Preparation / Special Considerations:

Prepare a solution at 5 mg/mL

Take 1 mL (50 mg) of Acyclovir 50 mg/mL and mix with 9 mL of D5W to obtain a final concentration of 5 mg / mL or 50 mg / 10 mL

ADENOSINE

Administration:

Rapid IV push (1 to 2 seconds)

Infuse as close to IV site as possible. Flush IV with NS immediately.

Compatible with D5W – NS

Preparation / Special Considerations:

Adenosine is available as a solution of 3 mg/mL (or 3000 mcg/mL), stored at room temperature.

If needed Adenosine could be diluted with NS. Take 1 mL (3mg) and mix with 9 mL of NS to obtain a final concentration of 0.3 mg/mL (300 mcg/mL).

AMIKACIN

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W – NS – D10W

Preparation / Special Considerations:

Restricted to Infectious Diseases Division

Prepare a solution at 5 mg/mL

Take 0.5 mL of Amikacin 250 mg/mL and mix with 24.5 mL of D5W to obtain a final concentration of 5 mg/mL or 125 mg/25mL.

AMPHOTHERICIN B LIPOSOME: AMBISOME ®

Administration:

IV infusion by syringe pump over 2 hours

Compatible with D5W only

Flush the line with D5W before and after administration

Do not mix with NS

Protect from light

Preparation / Special Considerations:

Restricted to Infectious Diseases Division

Reconstitute the 50 mg vial with 12 mL of SWI to obtain a concentration of 4 mg/mL. Shake vial well.

Prepare a solution at 1 mg/mL

8 mL solution: Take 2 mL (8 mg) from the reconstituted solution (4 mg/mL).

Using a 5 micron filter, mix with 6 mL of D5W.

12 mL solution: Take 3 mL (12 mg) from the reconstituted solution (4

mg/mL). Using a 5 micron filter, mix with 9 mL of D5W.

AMPHOTERICIN B

Administration:

IV infusion by syringe pump over 2 – 6 hours

Protect from light

Compatible with D5W - D10W - D15W - D20W

Preparation / Special Considerations:

Dilute the 50 mg vial with 10 mL of SWI to obtain a concentration of 5 mg/mL

Prepare a solution at 0.1 mg/mL

20 mL solution: Take 0.4 mL (2 mg) of the reconstituted solution and mix

with 19.6 mL of D5W to obtain a final concentration of 0.1

mg/mL

DO NOT mix with NS – solution will precipitate.

Protect from light

AMPICILLIN

Administration:

IV slow push over 3 – 5 minutes

Compatible with D5W – D10W – NS

Preparation / Special Considerations:

Dilute the 500 mg vial with 5 mL of SWI to obtain a final concentration of 100 mg/mL

Stability: 1 hour at room temperature; 4 hours if refrigerated.

AZITHROMYCIN

Administration:

IV infusion by syringe pump over 1 hour

Compatible with D5W – NS

Preparation / Special Considerations:

Dilute the 500 mg vial with 4.8 mL of SWI to obtain a concentration of 100 mg/mL.

Prepare a solution at 2 mg/mL

25 mL solution: Take 0.5 mL (50 mg) of the reconstituted solution and mix

with 24.5 mL of D5W to obtain a final concentration of 2

mg/mL or 50 mg/25 mL

Do not use higher concentrations due to local IV site reactions.

AZTREONAM

Administration:

IV slow push over 5 – 10 minutes

Compatible with D5W – NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Special Access Program Medication

Dilute 1 g vial with 10 mL of SWI to obtain a concentration of 100 mg/mL

Prepare a solution at **50 mg/mL**

Take 2 mL (200 mg) from reconstituted solution and mix with 4 mL solution:

2 mL of NS to obtain a final concentration of 50 mg/mL.

BUMETANIDE

Administration:

IV slow push over 2 minutes

Compatible with D5W - NS

Preparation / Special Considerations:

Special Access Program Medication

Bumetanide is available as 0.5 mg/mL ampoules.

CAFFEINE

Administration:

Loading dose: IV infusion by syringe pump over 30 minutes

Maintenance dose: IV slow push over 5 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Special Access Program Medication

Caffeine solution contains 10 mg/mL of caffeine base (equivalent to 20 mg/mL of caffeine citrate)

Store at room temperature.

CALCIUM GLUCONATE 10%

Administration:

IV infusion by syringe pump over 30 minutes.

Preparation / Special Considerations:

Calcium gluconate 10% = 100 mg/mL

Calcium gluconate 10% injection = 9.3 mg of elemental calcium

Must be diluted at least in 1 : 1 solution (with SWI) to obtain a final concentration of 50 mg/mL.

Prepare a solution at 50 mg/mL

Take 2 mL (200 mg) and mix with 2 mL of SWI to obtain a final concentration of 50 mg/mL or 200 mg/4 mL.

During infusion, monitor for bradycardia.

CASPOFUNGIN

Administration:

IV infusion by a syringe pump over 1 hour

Compatible with NS only

Preparation / Special Considerations:

Dilute the 50 mg vial with 10.5 mL of SWI or NS to obtain a concentration of 5 mg/mL.

Prepare a solution at 0.2 mg/mL

25 mL solution: Take 1 mL (5mg) from the reconstituted solution and mix

with 24 mL of NS to obtain a final concentration of 0.2

mg/mL or 5 mg/25mL.

CEFAZOLIN

Administration:

IV slow push over 3 – 5minutes

Compatible with D5W - D10W - NS

Preparation / Special Considerations:

Dilute the 1 g vial with 9.5 mL of SWI to obtain a final concentration of 100 mg/mL.

CEFEPIME

Administration:

IV infusion by a syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Preparation / Special Considerations:

Dilute the 1 g vial with 10 mL of SWI to obtain a concentration of 100 mg/mL

Prepare a solution at 40 mg/mL

15 mL solution: Take 6mL (600mg) from the reconstituted solution and mix

with 9 mL of D5W to obtain a final concentration of 40

mg/mL or 600 mg/15 mL.

CEFOTAXIME

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 1 g vial with 9.5 mL of SWI to obtain a final concentration of 100 mg/mL.

Dose of 100 mg and more: No other dilution required

Dose of 99 mg and less: Prepare a solution at 50 mg/mL

10 mL solution: Take 5mL (500mg) from the reconstituted solution and mix

with 5 mL of SWI to obtain a final concentration of 50 mg/mL

or 500 mg/10 mL

CEFOXITIN

Administration:

IV infusion by a syringe pump over 30 minutes.

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 1 g vial with 9.5 mL of SWI to obtain a concentration of 100 mg/mL.

Prepare a solution at 40 mg/mL

Take 2 mL (200mg) of the reconstituted solution and mix

5 mL solution: with 3 mL D5W to obtain a final concentration of 40mg/mL or

200 mg / 5 mL

CEFTAZIDIME

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 1 g vial with 5 mL of SWI to obtain a concentration of 180 mg/mL.

Caution: the addition of the diluent generates a positive pressure inside the vial. Use a vented needle.

Prepare a solution at 40 mg/mL

5 mL solution: Take 1 mL (180mg) of the reconstituted solution and mix

with 3.5 mL D5W to obtain a final concentration of 40 mg/mL

or 180 mg / 4.5 mL

CLINDAMYCIN

Administration:

IV infusion by syringe pump over 30 minutes

DO NOT give IV push

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 6 mg/mL

Take 1 mL (150 mg) of the 150 mg/mL solution and mix with 24 mL of D5W to obtain a final concentration of 6 mg/mL or 150 mg / 25 mL..

CLOXACILLIN

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 2 g vial with 18.8 mL of SWI to obtain a concentration of 100 mg/mL

Prepare a solution at 20 mg/mL

10 mL solution: Take 2ml (200mg) from the reconstituted solution and mix

with 8 mL of D5W to obtain a final concentration of 20

mg/mL or 200 mg / 10 mL.

DEXAMETHASONE

Administration:

IV slow push over 5 minutes

Compatible with D5W – NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dose of 0.1 mg and more: Prepare a solution at 1 mg/mL

Take 1 mL (10 mg) of dexamethasone 10 mg/mL (preservative free solution) and mix with 9 mL of NS to obtain a final concentration of 1 mg/mL.

Dose of 0.099 mg and less: Prepare a solution at 0.1 mg/mL

Take 1 mL (1 mg) of dexamethasone **1 mg/mL** and mix with 9 mL of NS to obtain a final concentration of 0.1 mg/mL

IV solution may be given PO

DIGOXIN

Administration:

IV slow push over 5 – 10 minutes

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dose of 100 mcg and more: No dilution required (250 mcg/mL)

Dose of 99.9 mcg and less: Prepare a solution at 50 mcg/mL

Take 1 mL of 250 mcg / mL solution and mix with 4 mL NS to obtain a final concentration of 50 mcg/mL or 250 mcg / 5 mL.

ENALAPRILAT

Administration:

IV slow push over at least 5 minutes

Compatible with D5W – NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 25 mcg/mL (0.025mg/mL)

Take 0.5 ml of the 1.25mg/mL solution and mix with 24.5 mL of NS to obtain a final concentration of 0.025mg/mL or 0.625mg / 25 mL

0.025 mg/mL = 25 mcg/mL

0.625 mg / 25 mL = 625 mcg / 25 mL

ERYTHROMYCIN

Administration:

IV infusion by syringe pump over 60 minutes

Terminal injection site compatibility: AA/Dextrose

Incompatible with D5W - D10W

Preparation / Special Considerations:

Dilute the 1 g vial with 20 mL of SWI to obtain a concentration of 50 mg/mL.

Prepare a solution at 5 mg/mL

10 mL solution: Take 1 mL from the reconstituted solution (50 mg/mL) and

mix with 9 mL of NS to obtain a final concentration of 5

mg/mL or 50mg / 10 mL.

ETHACRYNIC ACID

Administration:

IV slow push over 5 – 10 minutes

Preparation / Special Considerations:

Dilute the 50 mg vial with 50 mL of D5W or NS to obtain a final concentration of 1 mg/mL.

FAMOTIDINE

Administration:

IV slow push over 3 – 5 minutes

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 1 mg/mL

Take 1 mL (10 mg) of the 10 mg/mL solution and mix with 9 mL of SWI to obtain a final concentration of 1 mg/mL or 10 mg/mL

Famotidine is available in the fridge.

FENTANYL

Administration:

IV slow push over 2 – 5 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

If the dose is less than 2 mcg, prepare a solution at 12.5 mcg/mL

Take 1 mL (50 mcg) of fentanyl 50 mcg/mL and mix with 3 mL of NS to obtain a final concentration of 12.5 mcg/mL

For continuous IV infusion: see Pediatric drug infusion chart

FILGRASTIM: NEUPOGEN®

Administration:

Subcutaneous injection

SC administration is preferred because of prolonged serum levels over IV route

Can be given IV over 15 – 60 minutes

Preparation / Special Considerations:

Filgrastim is available as 300 mcg/mL vials.

IV administration: can be diluted in D5W to a minimum concentration of 15 mcg/mL.

Prepare a solution at 20 mcg/mL

Take 0.6 mL (180 mcg) of Filgrastim 300 mcg/mL and mix with 8.4 mL of D5W to obtain a final concentration of 20 mcg/mL

FLUCONAZOLE

Administration:

IV infusion by syringe pump over 1 hour

Compatible with D5W - D10W

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Available as 2 mg/mL bags

No dilution required

FLUMAZENIL

Administration:

IV push over 15-30 seconds

Compatible with D5W - NS

Preparation / Special Considerations:

Available as 0.1 mg / mL $\,$

No dilution required

FUROSEMIDE

Administration:

IV slow push over 3 – 5 minutes

Compatible with D5W - NS

Preparation / Special Considerations:

Furosemide is available as 10 mg/mL

GENTAMICIN

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Preparation / Special Considerations:

Dose of 10 mg and more: no dilution required (10 mg/mL)

Dose of 9.9 mg and less: Prepare a solution at 2 mg/mL

Take 2 mL (20 mg) of 10 mg/mL solution and mix with 8 mL of D5W to obtain a final concentration of 2 mg/mL or 20 mg/ 10 mL

HYDROCORTISONE

Administration:

IV infusion by syringe pump over 15 minutes

Compatible with D5W – NS

Preparation / Special Considerations:

Dilute the 100 mg Acto-vial with 2 mL of SWI to obtain a concentration of 50 mg/mL

Prepare a solution at 1 mg/mL

25 mL solution: Take 0.5 mL (25mg) of the reconstituted solution and mix

with 24.5 mL of NS to obtain a final concentration of 1mg/mL

or 25 mg / 25 mL.

HYDRALAZINE

Administration:

IV slow push over 5 minutes

Compatible with NS only

Minimize contact with metal (needles) as it may discolor the solution

Preparation / Special Considerations:

Prepare a solution at 2 mg/mL

Take 1 mL (20 mg) of the 20 mg/mL solution and mix with 9 mL of NS to obtain a final concentration of 2 mg/mL or 20 mg/ 10 mL.

IBUPROFEN

Administration:

IV infusion by syringe pump over 15 minutes

Preparation / Special Considerations:

Special Access Program Medication

Pedea: Available as a 5 mg/mL ampoule.

No dilution required

Available as a 10 mg/mL vial.

Neoprofen: Must be diluted at 5 mg/mL.

Add the same amount of NS as the volume necessary for the dose.

IMIPENEM - CILASTATIN: PRIMAXIN®

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with NS

Preparation / Special Considerations:

Dilute the 500 mg vial with 10 mL of NS from a 100 mL mini-bag of NS.

Add all the solution in the mini-bag.

Rinse the vial with 10 mL of NS from the same mini-bag and reinject 10 mL into mini-bag to obtain a final concentration of 5 mg/mL or 500 mg / 100 mL.

Withdraw the quantity needed.

Pharmacy: measure exact volume to obtain 100 mL.

INDOMETHACIN

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with NS

Preparation / Special Considerations:

Dilute the 1 mg vial with 2 mL of SWI to obtain a final concentration of 0.5 mg/mL

Can be mixed with NS just before administration

LEVOTHYROXINE

Administration:

IV slow push over 2-3 minutes

Compatible with NS

Preparation / Special Considerations:

Dilute the 500 mcg vial with 5 mL of NS to obtain a final concentration of 100 mcg/mL.

LORAZEPAM

Administration:

IV slow push over 3 – 5 minutes

Compatible with NS

Preparation / Special Considerations:

Lorazepam is available in the fridge as 4 mg/mL vials.

Prepare a solution at 2 mg/mL

Take 1 mL (4 mg) of the 4 mg/mL solution and mix with 1 mL of NS to obtain a final concentration of 2 mg/mL.

It is not recommended to dilute further than 2 mg/mL as per the manufacturer due to stability issues

MEROPENEM

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with NS

Preparation / Special Considerations:

Dilute the 500 mg vial with 10 mL of SWI to obtain a concentration of 50 mg/mL

Dilute the 1 g vial with 20 mL of SWI to obtain a concentration of 50 mg/mL

Prepare a solution at 20 mg/mL

10 mL solution: Take 4 mL from the reconstituted solution (50 mg/mL) and

mix with 6 mL of NS to obtain a final concentration of 20

mg/mL or 200 mg / 10 mL

METRONIDAZOLE

Administration:

IV infusion by syringe pump over 1 hour

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Metronidazole is available as a 5 mg/mL bag.

No dilution required

Do not refrigerate

MIDAZOLAM

Administration:

IV slow push over at least 5 minutes

Compatible with D5W - NS

Continuous IV infusion by a syringe pump

Preparation / Special Considerations:

Continuous IV infusion: see Pediatric drug infusion chart

Prepare a solution at 0.5 mg/mL

Take 1 mL (5 mg) of the 5 mg/mL solution and mix with 9 mL of NS or D5W to obtain a final concentration of 0.5 mg/mL or 5 mg/10 mL.

MORPHINE

Administration:

IV slow push over at least 5 minutes

Compatible with NS

Terminal injection site compatibility: AA/Dextrose

Continuous IV infusion by a syringe pump

Preparation / Special Considerations:

Continuous IV infusion: see Pediatric drug infusion chart

Dose of 0.04 mg and more: Prepare a solution at 1 mg/mL

Take 1 mL of the 10 mg/mL solution and mix with 9 mL of NS to obtain a final concentration of 1 mg/mL.

Dose of 0.039 mg and less: Prepare a solution at 0.1 mg/mL

Take 1 mL of the 1 mg/mL solution and mix with 9 mL of NS to obtain a final concentration of 0.1 mg/mL or 1 mg/ 10 mL.

NALOXONE

Administration:

IV slow push over 30 seconds

Compatible with D5W - NS

Preparation / Special Considerations:

No dilution required

PENICILLIN G

Administration:

For bacteremic dose: IV infusion by syringe pump over 15 minutes

For meningitic dose: IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

N.B.: Cardiac arrest has been reported in patients who received high doses infused rapidly.

Preparation / Special Considerations:

Dilute the aqueous crystalline Penicillin G 1 000 000 units vial with 9.7 mL of SWI to obtain a concentration of 100 000 units/mL

Prepare a solution at 50 000 units/mL

10 mL solution: Take 5 mL (500 000 units) of the reconstituted solution and

mix with 5 mL of D5W to obtain a final concentration of

50 000 units/mL or 500 000 units / 10 mL.

PHENOBARBITAL

Administration:

IV infusion by syringe pump over 10-15 minutes

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 10 mg/mL

Take 1 mL of the 30 mg/mL solution and mix with 2 mL of NS to obtain a final concentration of 10 mg/mL or 30 mg/3mL.

PHENYTOIN

Administration:

IV infusion by syringe pump over 30 minutes

Use in line filter (001248)

Compatible with NS only

Flush line with NS before and after administration to avoid precipitation

Do not mix with D5W

N.B.: Rapid administration may lead to hypotension, arrhythmias, seizures and cardiorespiratory arrest

Preparation / Special Considerations:

Prepare a solution at 10 mg/mL

Take 1 mL (50 mg) of the 50 mg/mL solution and mix with 4 mL of NS to obtain a final concentration of 10 mg/mL or 50 mg/5mL.

Do not refrigerate. Use immediately after dilution

PIPERACILLIN - TAZOBACTAM

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 2g (2.25g) vial with 8.4 mL of SWI to obtain a concentration of 200 mg/mL.

Prepare a solution of 50 mg/mL

10 mL solution: Take 2 mL (400 mg) and mix with 6 mL of D5W to obtain a

final concentration of 50 mg/mL or 400 mg in 8 mL (as

piperacillin).

PROTAMINE

Administration:

IV slow push over 10 minutes (preferred) – if necessary over 5 minutes is possible

Compatible with D5W – D10W

Preparation / Special Considerations:

Prepare a solution at 1 mg/mL

Take 1 mL of the 10mg/mL solution and mix with 9 mL of NS to obtain a final concentration of 1 mg/mL or 10mg / 10 mL.

RANITIDINE

Administration:

IV infusion over 15 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 2.5 mg/mL

Take 1 mL of the 25 mg/mL solution and mix with 9 mL of NS to obtain a final concentration of 2.5 mg/mL or 25 mg / 10 mL

SODIUM BICARBONATE

Administration:

IV infusion by syringe pump over at least 30 minutes – 1 hour

Compatible with D5W - D10W - NS

Preparation / Special Considerations:

Maximum concentration: 0.5 mmol/mL

Prepare a solution at **0.5 mmol/mL**

Take 5 mL of the 1 mmol/mL solution and mix with 5 mL of SWI to obtain a final concentration of 0.5 mmol/mL or 5 mmol / 10 mL.

Sodium bicarbonate is available as 1 mmol/mL vial.

TICARCILLIN-CLAVULANATE

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 3.1 g vial with 13 mL of SWI to obtain a concentration of 200 mg/mL of ticarcillin.

Prepare a solution at 50 mg/mL

4 mL solution: Take 1 mL (200mg) of the reconstituted solution and mix

with 3 mL of D5W to obtain a final concentration of 50

mg/mL or 200mg / 4 mL

TOBRAMYCIN

Administration:

IV infusion by syringe pump over 30 minutes

Compatible with D5W – D10W – NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dose of 10 mg and more: no dilution required

Dose of 9.9 mg and less: prepare a solution at 2 mg/mL

Take 1 mL of 10mg/mL solution and mix with 4 mL of D5W to obtain a final concentration of 2 mg/mL or 10mg / 5 mL

VANCOMYCIN

Administration:

IV infusion by syringe pump over 1 hour

Compatible with D5W – D10W – NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Dilute the 500 mg vial with 10 mL of SWI to obtain a concentration of 50 mg/mL.

Prepare a solution at 5 mg/mL

Take 1 mL (50 mg) of the reconstituted solution and mix with

10 mL solution: 9 mL of D5W to obtain a final concentration of 5 mg/mL or

50mg / 10mL.

VITAMIN K

Administration:

Intramuscular

IV infusion by syringe pump over 15 minutes

Compatible with D5W - D10W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

No dilution required

If needed, can be diluted in D5W - D10w - NS

ZIDOVUDINE (AZT)

Administration:

IV infusion by syringe pump over 1 hour

Compatible with D5W - NS

Terminal injection site compatibility: AA/Dextrose

Preparation / Special Considerations:

Prepare a solution at 4 mg/mL

Take 4 mL (40 mg) of 10 mg/mL solution and mix with 6 mL of D5W to obtain a final concentration of 4 mg/mL or 40 mg / 10 mL

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