



Appendix A: General Drug Library

Disclaimer: This information is provided for demonstration purposes only. ASHP makes no representations about the validity, accuracy, reliability or suitability of the information, specifically disclaims liability for consequences that may arise in connection with the information, and urges practitioners to exercise their best professional judgments about the dosing limits presented. Dosing limits should be based upon hospital utilization patterns, as well as on acceptable dosing ranges. Practitioners are advised that some of the dosing limits presented here may exceed FDA-approved doses. This was done to avoid excessive alerts and alert fatigue. Practitioners are advised to use caution when determining appropriate dosing limits.

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|---------------------------|--------------------|-----------------------------|----------------------|
| Abciximab < 80 kg | 9 mg | 250 | 0.036 mg/mL |
| Abraxane | - | - | 5 mg/mL |
| Abciximab 80 kg or > | 9 mg | 250 | 0.036 mg/mL |
| Acetylcysteine 6 g/500 mL | 6,000 mg | 500 | 12 mg/mL |
| Acetylcysteine BAG 1 | - | - | mL mode |
| Acetylcysteine BAG 2 | - | - | mL mode |
| Acetylcysteine BAG 3 | - | - | mL mode |
| Acetylcysteine renal | 1,200 mg | 100 | 12 mg/mL |
| Acetylcysteine renal | 600 mg | 100 | 6 mg/mL |
| ADO-trastuzumab | - | - | mL mode |
| Aldesleukin | - | - | mL mode |
| Alemtuzumab | - | - | mL mode |
| Alprostadil | 1 mg | 100 | 0.01 mg/mL |
| Alteplase IR | 12.5 mg | 50 | 0.25 mg/mL |
| Alteplase PE | 100 mg | 100 | 1 mg/mL |
| Alteplase stroke | - | - | 1 mg/mL |
| Amifostine | - | - | mL mode |
| Aminocaproic ACID | 5 g | 100 | 0.05 g/mL |
| AMIODarone load | 150 mg | 100 | 1.5 mg/mL |
| AMIODarone | 1,500 mg | 250 | 6 mg/mL |
| AMIODarone | 250 mg | 250 | 1 mg/mL |
| Antibiotic 50 mL | - | - | mL mode |
| Antibiotic 100 mL | - | - | mL mode |
| Antibiotic 150 mL | - | - | mL mode |
| Antibiotic 200 mL | - | - | mL mode |
| Antibiotic 250 mL | - | - | mL mode |
| Antibiotic 300 mL | - | - | mL mode |
| Antibiotic 500 mL | - | - | mL mode |
| Arsenic trioxide | - | - | mL mode |
| Asparaginase | - | - | mL mode |
| ATG (Atgam) 50 mL | - | - | mL mode |
| ATG (Atgam) 100 mL | - | - | mL mode |
| ATG (Atgam) 150 mL | - | - | mL mode |
| ATG (Atgam) 250 mL | - | - | mL mode |
| ATG (Atgam) 500 mL | - | - | mL mode |
| azaCITIDine | - | - | mL mode |
| Banana bag | - | - | mL mode |
| Basiliximab 50 mL | 20 mg | 50 | 0.4 mg/mL |
| Bendamustine | - | - | mL mode |
| BEVACizumab 30 min | - | - | Variable mg/mL |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|--------------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|
| mcg/kg/min | | - | - | - | 0.125 | 250 |
| mL/hr | | - | - | 210 | - | - |
| mcg/min | | 5 | 10 | - | 10.1 | 250 |
| mL/hr | | - | - | 100 | - | 500 |
| mL/hr | | - | - | - | 300 | - |
| mL/hr | | - | 125 | - | 150 | - |
| mL/hr | | - | 62.5 | - | 100 | - |
| mL/hr | | - | - | 400 | - | 100 |
| mL/hr | | - | - | 400 | - | 100 |
| mL/hr | | - | - | 600 | - | - |
| mL/hr | | - | - | 300 | - | 50 |
| mL/hr | | - | - | 80 | - | 100 |
| mcg/kg/min | | - | - | 0.15 | 0.4 | 100 |
| mg/hr | | 0.24 | - | - | 2 | 50 |
| mg/hr | | 50 | - | 50 | 100 | 100 |
| mg/hr | | - | - | 81 | 81 | - |
| mL/hr | | - | - | 300 | - | 50 |
| g/hr | | - | - | 10 | - | - |
| mg/min | | - | 15 | 15 | - | 100 |
| mg/min | | 0.4 | 1 | - | 2 | 250 |
| mg/min | | 0.4 | 1 | - | 2 | 250 |
| mL/hr | | - | - | 400 | - | - |
| mL/hr | | - | - | 500 | - | - |
| mL/hr | | - | - | 300 | - | - |
| mL/hr | | 100 | - | 650 | - | - |
| mL/hr | | - | - | 500 | - | - |
| mL/hr | | 150 | - | 650 | - | - |
| mL/hr | | - | - | 600 | - | - |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 120 | - | 50 |
| mL/hr | | - | - | 20 | - | 50 |
| mL/hr | | - | - | 40 | - | 100 |
| mL/hr | | - | - | 52 | - | 150 |
| mL/hr | | - | - | 80 | - | 250 |
| mL/hr | | - | - | 155 | - | 500 |
| mL/hr | | - | - | 240 | - | 100 |
| mL/hr | | - | - | 350 | 999 | 1,000 |
| mL/hr | | 50 | - | - | 150 | 50 |
| mL/hr | | - | - | 999 | - | 500 |
| mL/hr | - | - | - | 350 | - | 100 |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|----------------------------|--------------------|-----------------------------|----------------------|
| BEVACizumab 60 min | - | - | Variable mg/mL |
| BEVACizumab 90 min | - | - | Variable mg/mL |
| Bivalirudin non-PCI | 250 mg | 250 | 1 mg/mL |
| Bivalirudin cath lab | 250 mg | 50 | 5 mg/mL |
| Bleomycin | - | - | mL mode |
| Blood products | - | - | mL mode |
| Bumetanide | 25 mg | 100 | 0.25 mg/mL |
| Busulfan | - | - | 0.5 mg/mL |
| Ca CHLORide CRRT | 8,000 mg | 1000 | 8 mg/mL |
| Ca GLUConate dialysis | - | - | Variable g/mL |
| Cabazitaxel 250 mL | - | - | mL mode |
| Cabazitaxel 500 mL | - | - | mL mode |
| Caffeine-sodium benz | 500 mg | 500 | 1 mg/mL |
| Calcium CHLORide | - | - | Variable g/mL |
| Calcium GLUConate | - | - | Variable g/mL |
| CARBOplat desen 100 | - | - | mL mode |
| CARBOplat desen 500 | - | - | mL mode |
| CARBOplatin 250 mL | - | - | mL mode |
| CARBOplatin 500 mL | - | - | mL mode |
| CARBOplatin over 24 hr | - | - | mL mode |
| Carfilzomib | - | - | mL mode |
| Carmustine (BCNU) | - | - | mL mode |
| CETuximab | - | - | 2 mg/mL |
| CisAtracurium | 200 mg | 100 | 2 mg/mL |
| CISplatin 1 mg/mL | - | - | 1 mg/mL |
| CISplatin 1000 mL | - | - | mL mode |
| CISplatin 250 mL | - | - | mL mode |
| CISplatin 500 mL | - | - | mL mode |
| CISplatin mannitol 250 mL | - | - | mL mode |
| CISplatin mannitol 500 mL | - | - | mL mode |
| CISplatin mannitol 1000 mL | - | - | mL mode |
| Cladribine | - | - | mL mode |
| Clevidipine | 25 mg | 50 | 0.5 mg/mL |
| Clofarabine | - | - | 0.4 mg/mL |
| Conivaptan load | 20 mg | 100 | 0.2 mg/mL |
| Conivaptan | 20 mg | 100 | 0.2 mg/mL |
| CSA drip solid organ | 500 mg | 250 | 2 mg/mL |
| CSA drip solid organ | 250 mg | 250 | 1 mg/mL |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|--------------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|
| mL/hr | - | - | - | 120 | - | 100 |
| mL/hr | - | - | - | 90 | - | 100 |
| mg/kg/hr | - | - | - | - | 0.2 | 50 |
| mg/kg/hr | - | - | - | - | 1.75 | 50 |
| mL/hr | - | - | - | 240 | - | 50 |
| mL/hr | - | - | - | - | 999 | - |
| mg/hr | - | 0.5 | - | - | 4 | 100 |
| mg/kg/hr | - | - | - | 0.6 | - | - |
| mL/hr | - | - | - | - | 999 | 1,000 |
| g/hr | - | - | - | - | 4 | 50 |
| mL/hr | - | - | - | 300 | - | 250 |
| mL/hr | - | - | - | 550 | - | 500 |
| mL/hr | - | - | - | 525 | - | - |
| g/hr | - | - | - | - | 4 | 100 |
| g/hr | - | - | - | - | 4 | 100 |
| mL/hr | - | - | - | 110 | - | 100 |
| mL/hr | - | - | - | 50 | - | 500 |
| mL/hr | - | - | - | 650 | - | 250 |
| mL/hr | - | - | - | 999 | - | 500 |
| mL/hr | - | - | - | 50 | - | 1000 |
| mL/hr | - | - | - | 510 | - | 50 |
| mL/hr | - | - | - | 320 | - | 250 |
| mL/hr | - | - | - | - | 300 | - |
| mcg/kg/min | - | 0.2 | - | 15 | 20 | 100 |
| mg/min | - | - | - | 1 | - | - |
| mL/hr | - | - | - | 999 | - | 1,000 |
| mL/hr | - | - | - | 340 | - | 250 |
| mL/hr | - | - | - | 610 | - | 500 |
| mL/hr | - | - | - | 370 | - | 250 |
| mL/hr | - | - | - | 660 | - | 500 |
| mL/hr | - | - | - | 999 | - | 1000 |
| mL/hr | - | - | - | 160 | - | 250 |
| mg/hr | - | - | - | 32 | - | 50 |
| mL/hr | - | - | - | 75 | - | - |
| mg/hr | - | - | - | 45 | - | 100 |
| mg/hr | - | - | - | - | 1.7 | 100 |
| mg/hr | - | - | - | 5 | 9.9 | 250 |
| mg/hr | - | - | - | 5 | 9.9 | 250 |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|------------------------|--------------------|-----------------------------|----------------------|
| cycloPHOSPHAMIDE 250 | - | - | mL mode |
| cycloPHOSPHAMIDE 500 | - | - | mL mode |
| CYTarabine 100 mL | - | - | mL mode |
| CYTarabine 250 mL/1 hr | - | - | mL mode |
| CYTarabine 250 mL/2 hr | - | - | mL mode |
| CYTarabine 250 mL/3 hr | - | - | mL mode |
| CYTarabine cont inf | - | - | mL mode |
| Cytogam | - | - | Variable mg/mL |
| Dacarbazine | - | - | mL mode |
| Dantrolene | - | - | Variable mg/mL |
| DAUNOrubicin | - | - | mL mode |
| DaunoXome | - | - | 1 mg/mL |
| Decitabine 100 mL | - | - | mL mode |
| Decitabine 250 mL | - | - | mL mode |
| Deferoxamine | - | - | Variable mg/mL |
| Denileukin | - | - | 15 mcg/mL |
| Desmopressin | - | - | mL mode |
| dexMEDetomidine | 400 mcg | 100 | 4 mcg/mL |
| dexMEDetomidine | 200 mcg | 50 | 4 mcg/mL |
| Dexrazoxane (Totect) | - | - | mL mode |
| Dexrazoxane (Zinecard) | - | - | mL mode |
| Diltiazem | 125 mg | 125 | 1 mg/mL |
| DOBUtamine | 1,000 mg | 250 | 4 mg/mL |
| DOBUtamine | 500 mg | 250 | 2 mg/mL |
| DOBUtamine-echo | 500 mg | 250 | 2 mg/mL |
| DOCEtaxel 250 mL | - | - | mL mode |
| DOCEtaxel 500 mL | - | - | mL mode |
| DOPamine | 800 mg | 250 | 3.2 mg/mL |
| DOPamine | 400 mg | 250 | 1.6 mg/mL |
| Doxil 250 mL | - | - | mL mode |
| Doxil 500 mL | - | - | mL mode |
| DOXOrubicin over 24 hr | - | - | mL mode |
| DOXOrubicin | - | - | mL mode |
| EPINEPHrine | 16 mg | 250 | 0.064 mg/mL |
| EPINEPHrine | 5 mg | 250 | 0.02 mg/mL |
| Epoprostenol PCI | - | - | 2,000 ng/mL |
| Eptifibatide | 200 mg | 100 | 2 mg/mL |
| Esmolol | 2,000 mg | 100 | 20 mg/mL |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|--------------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|
| mL/hr | | - | - | 680 | - | 250 |
| mL/hr | | - | - | 999 | - | 500 |
| mL/hr | | - | - | 160 | - | 100 |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 200 | - | 250 |
| mL/hr | | - | - | 115 | - | - |
| mL/hr | | - | - | 50 | - | 1,000 |
| mg/kg/hr | - | - | - | - | 62 | - |
| mL/hr | | - | - | 640 | - | 250 |
| mg/hr | - | - | - | 500 | - | - |
| mL/hr | | - | - | 250 | - | 50 |
| mL/hr | | - | - | 140 | - | - |
| mL/hr | | - | - | 160 | - | 100 |
| mL/hr | | - | - | 320 | - | 250 |
| mg/hr | - | - | - | 1,500 | - | - |
| mcg/kg/hr | | - | - | 36 | - | - |
| mL/hr | | - | 100 | 200 | - | 50 |
| mcg/kg/hr | | 0.2 | 0.2 | 2 | 4 | 100 |
| mcg/kg/hr | | 0.2 | 0.2 | 2 | 4 | 50 |
| mL/hr | | - | - | 999 | - | 1,000 |
| mL/hr | | - | - | 640 | - | 100 |
| mg/hr | | 1 | 5 | 15 | 20 | 125 |
| mcg/kg/min | | - | 2.5 | 20 | - | 250 |
| mcg/kg/min | | - | 2.5 | 20 | - | 250 |
| mcg/kg/min | | - | - | 100 | - | 250 |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 610 | - | 500 |
| mcg/kg/min | | 1 | 2 | 20 | - | 250 |
| mcg/kg/min | | 1 | 2 | 20 | - | 250 |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 610 | - | 500 |
| mL/hr | | - | - | 50 | - | 1000 |
| mL/hr | | - | - | 320 | - | 100 |
| mcg/kg/min | | - | 0.03 | 0.5 | - | 250 |
| mcg/kg/min | | - | 0.03 | 0.5 | - | 250 |
| ng/kg/min | | 1 | - | 16 | - | 100 |
| mcg/kg/min | | - | - | - | 2 | 100 |
| mcg/kg/min | | - | 50 | 300 | 350 | 100 |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|----------------------|--------------------|-----------------------------|----------------------|
| EtopoPHOS | - | - | mL mode |
| Etoposide 250 mL | - | - | mL mode |
| Etoposide 500 mL | - | - | mL mode |
| Etoposide 1000 mL | - | - | mL mode |
| fentaNYL | - | - | 50 mcg/mL |
| Ferric gluconate | 125 mg | 100 | 1.25 mg/mL |
| Ferric gluconate | 250 mg | 250 | 1 mg/mL |
| Floxuridine | - | - | mL mode |
| FLUdarabine | - | - | mL mode |
| Fluorouracil | - | - | mL mode |
| Foscarnet | - | - | mL mode |
| Fosphenytoin | - | - | Variable mg/mL |
| Furosemide | 100 mg | 100 | 1 mg/mL |
| Ganciclovir | - | - | mL mode |
| Gemcitabine | - | - | mL mode |
| Heparin | 25,000 units | 250 | 100 units/mL |
| Hetastarch | - | - | mL mode |
| HYDROmorphine | - | - | 1 mg/mL |
| Ibutilide | - | - | mL mode |
| IDArubicin | - | - | mL mode |
| Ifosfamide + MESNA | - | - | mL mode |
| Ifosfamide 100 mL | - | - | mL mode |
| Ifosfamide 1000 mL | - | - | mL mode |
| Ifosfamide 250 mL | - | - | mL mode |
| Insulin HIGH DOSE | - | - | 10 units/mL |
| Insulin STANDARD | - | - | 1 unit/mL |
| Investigational drug | - | - | mL mode |
| Irinotecan 250 mL | - | - | mL mode |
| Irinotecan 500 mL | - | - | mL mode |
| Iron dextran | - | - | mL mode |
| Iron dextran | 25 mg | 50 | 0.5 mg/mL |
| Iron SUCROSE | 500 mg | 250 | 2 mg/mL |
| Iron SUCROSE | 200 mg | 100 | 2 mg/mL |
| Iron SUCROSE | 300 mg | 250 | 1.2 mg/mL |
| Isoproterenol | 1 mg | 50 | 0.02 mg/mL |
| Isoproterenol EP | 1 mg | 250 | 0.004 mg/mL |
| IVIG sucrose free | - | - | mL mode |
| IVIG sucrose | - | - | mL mode |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|--------------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|
| mL/hr | | - | - | 160 | - | 100 |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 610 | - | 500 |
| mL/hr | | - | - | 999 | - | 1000 |
| mcg/hr | | - | - | 200 | 999 | - |
| mL/hr | | - | - | 120 | - | 100 |
| mL/hr | | - | - | 150 | - | 250 |
| mL/hr | | - | - | 610 | - | 500 |
| mL/hr | | - | - | 240 | - | 100 |
| mL/hr | | - | - | - | 50 | 1000 |
| mL/hr | | - | - | 500 | - | - |
| mg/min | - | - | - | - | 150 | - |
| mg/hr | | - | - | 60 | 150 | 100 |
| mL/hr | | - | - | 160 | - | - |
| mL/hr | | - | - | 670 | - | 250 |
| Units/hr | | 200 | - | 2,000 | 3,500 | 250 |
| mL/hr | | - | - | - | 999 | 500 |
| mg/hr | | - | - | 5 | 19 | - |
| mL/hr | | - | - | 300 | - | 50 |
| mL/hr | | - | - | 640 | - | 100 |
| mL/hr | | - | - | 60 | - | 1,000 |
| mL/hr | | - | - | 320 | - | 100 |
| mL/hr | | - | - | 385 | - | 1,000 |
| mL/hr | | - | - | 640 | - | 250 |
| Units/hr | | - | - | 700 | - | - |
| Units/hr | | - | - | 700 | - | - |
| mL/hr | | - | - | - | - | - |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 610 | - | 500 |
| mL/hr | | 62.5 | - | 84 | 150 | 500 |
| mL/hr | | - | - | - | 200 | 50 |
| mL/hr | | - | - | 62.5 | 190 | 250 |
| mL/hr | | - | - | - | 450 | 100 |
| mL/hr | | - | - | - | 180 | 250 |
| mcg/kg/min | | 0.01 | 0.03 | 0.3 | - | 50 |
| mcg/kg/min | | - | - | 0.3 | - | - |
| mL/kg/hr | | - | - | 4 | - | - |
| mL/kg/hr | | - | - | 2.5 | - | - |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|-------------------------|--------------------|-----------------------------|----------------------|
| IV MAINTenance fluid | - | - | mL mode |
| IV MAINTenance with KCl | - | - | mL mode |
| Ixabepilone | - | - | mL mode |
| Ketamine | - | - | 2 mg/mL |
| Ketamine | - | - | 1 mg/mL |
| Labetalol | 250 mg | 50 | 5 mg/mL |
| Lepirudin | 100 mg | 250 | 0.4 mg/mL |
| Leucovorin | - | - | mL mode |
| levETIRAcetam | - | - | mL mode |
| Lidocaine | 2 g | 250 | 0.008 g/mL |
| Lipids 20% | - | - | mL mode |
| Lipids anesthetic OD | 50 g | 250 | 0.2 g/mL |
| LORazepam | 100 mg | 100 | 1 mg/mL |
| LORazepam | 50 mg | 50 | 1 mg/mL |
| Mag sul 4 g load | 4 g | 50 | 0.08 g/mL |
| Mag sul 4 g load | 4 g | 100 | 0.04 g/mL |
| Mag sul 6 g load | 6 g | 100 | 0.06 g/mL |
| Mag sulfate contin | 20 g | 500 | 0.04 g/mL |
| Mag sulfate seizure | 4 g | 50 | 0.08 g/mL |
| Mag sulfate seizure | 2 g | 50 | 0.04 g/mL |
| Magnesium asthma | 2 g | 100 | 0.02 g/mL |
| Magnesium replace | - | - | Variable g/mL |
| Mannitol 20% | 100 g | 500 | 0.2 g/mL |
| Mannitol 20% | 50 g | 250 | 0.2 g/mL |
| Mannitol 25% | - | - | mL mode |
| Mannitol 25% | 12.5 mg | 50 | 0.25 mg/mL |
| Melphalan | - | - | 2 mg/mL |
| Melphalan | - | - | 0.4 mg/mL |
| MESNA cont infusion | - | - | mL mode |
| MESNA intermittent | - | - | mL mode |
| METHOTREXate 1,000 mL | - | - | mL mode |
| METHOTREXate 50 mL | - | - | mL mode |
| METHOTX/bicarb 1 L | - | - | mL mode |
| METHOTX/bicarb 500 mL | - | - | mL mode |
| methylPRED sp load | - | - | mL mode |
| methylPRED spinal | - | - | Variable g/mL |
| methylPREDnisolone | - | - | mL mode |
| Metoprolol | - | - | mL mode |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|-----------------------|---------------|---------------|---------------|---------------|---------------|----------------------|
| mL/hr | | - | - | - | 999 | - |
| mL/hr | | 4 | - | 400 | - | - |
| mL/hr | | - | - | 110 | - | 250 |
| mg/kg/hr | | - | - | 0.2 | 0.2 | - |
| mg/kg/hr | | - | - | 0.2 | 0.2 | - |
| mg/min | | 0.1 | 1 | 6 | 10 | 50 |
| mg/kg/hr | | 0.02 | - | 0.21 | - | 250 |
| mL/hr | | - | - | 600 | - | 100 |
| mL/hr | | - | - | 400 | - | - |
| mg/min | | 0.5 | 1 | 4 | 6 | 250 |
| mL/hr | | - | - | 25 | 62.5 | - |
| mL/hr | | 750 | - | 999 | - | 250 |
| mg/hr | | - | - | 20 | 30 | 100 |
| mg/hr | | - | - | 20 | 30 | 50 |
| g/hr | | - | - | 8 | 12 | 50 |
| g/hr | | - | - | 8 | 12 | 100 |
| g/hr | | - | - | 8 | 12 | 100 |
| g/hr | | 0.5 | 2 | 4 | 6 | 500 |
| mL/hr | | - | - | - | 200 | 50 |
| mL/hr | | - | - | - | 600 | 50 |
| mL/hr | | - | - | - | 310 | 100 |
| g/hr | - | - | - | 3 | 6 | - |
| mL/hr | | - | - | 999 | - | 500 |
| mL/hr | | - | - | 999 | - | 250 |
| mL/hr | | - | - | 999 | - | - |
| mL/hr | | - | - | 999 | - | 50 |
| mL/hr | | - | - | 999 | - | - |
| mL/hr | | - | - | 999 | - | - |
| mL/hr | | - | - | 60 | - | 1,000 |
| mL/hr | | - | - | 300 | - | 50 |
| mL/hr | | - | - | 100 | - | 1,000 |
| mL/hr | | - | - | 240 | - | 50 |
| mL/hr | | - | - | 290 | - | 1,000 |
| mL/hr | | - | - | 150 | - | 500 |
| mL/hr | | - | - | - | 400 | 100 |
| mg/kg/hr | - | - | - | - | 5.4 | 500 |
| mL/hr | | - | - | 400 | - | - |
| mL/hr | | - | - | 400 | - | - |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|------------------------|--------------------|-----------------------------|----------------------|
| Midazolam seizure | 125 mg | 125 | 1 mg/mL |
| Midazolam | 125 mg | 125 | 1 mg/mL |
| Milrinone | 20 mg | 100 | 0.2 mg/mL |
| mitoXANtrone | - | - | mL mode |
| Morphine | - | - | 25 mg/mL |
| Mycophenolate 500 mg | - | - | Variable mg/mL |
| Mycophenolate 750 mg | - | - | Variable mg/mL |
| Mycophenolate 1,000 mg | - | - | Variable mg/mL |
| Mycophenolate 1,500 mg | - | - | Variable mg/mL |
| Nelarabine | - | - | 5 mg/mL |
| Nesiritide | 1.5 mg | 250 | 0.006 mg/mL |
| niCARDipine | 100 mg | 250 | 0.4 mg/mL |
| niCARDipine | - | - | 0.2 mg/mL |
| NitroGLYCERIN | 50 mg | 250 | 0.2 mg/mL |
| NitroPRUSSide | - | - | 1.6 mg/mL |
| NitroPRUSSide | - | - | 0.4 mg/mL |
| Nivolumab | - | - | mL mode |
| NOREPInephrine | 16 mg | 250 | 0.064 mg/mL |
| NOREPInephrine | 8 mg | 250 | 0.032 mg/mL |
| Octreotide | 1,250 mcg | 250 | 5 mcg/mL |
| Ofatumumab | - | - | mL mode |
| Ondansetron drip | 50 mg | 50 | 1 mg/mL |
| Oxaliplatin | - | - | mL mode |
| Oxytocin labor | 20 Units | 1000 | 0.02 Units/mL |
| Oxytocin post part | 40 Units | 1000 | 0.04 Units/mL |
| PACLitaxel over 1 hr | - | - | mL mode |
| PACLitaxel over 24 hr | - | - | mL mode |
| PACLitaxel over 3 hr | - | - | mL mode |
| Panitumumab 100 mL | - | - | mL mode |
| Panitumumab 150 mL | - | - | mL mode |
| Pantoprazole | 80 mg | 100 | 0.8 mg/mL |
| Pegaspargase | - | - | mL mode |
| PEMEtrexed | - | - | mL mode |
| PENTobarbital | 2000 mg | 250 | 8 mg/mL |
| Pentostatin | - | - | mL mode |
| Pertuzumab | - | - | mL mode |
| PHENobarbital seizure | - | - | mL mode |
| PHENobarbital | 2,000 mg | 250 | 8 mg/mL |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|-----------------------|---------------|---------------|---------------|---------------|---------------|----------------------|
| mg/kg/hr | | - | - | 0.6 | 1 | 100 |
| mg/hr | | - | - | 20 | 30 | 100 |
| mcg/kg/min | | 0.1 | 0.25 | - | 1 | 100 |
| mL/hr | | - | - | 250 | - | 50 |
| mg/hr | | - | - | 50 | 499 | - |
| mg/hr | - | - | - | - | 250 | - |
| mg/hr | - | - | - | - | 375 | - |
| mg/hr | - | - | - | - | 500 | - |
| mg/hr | - | - | - | - | 750 | - |
| mL/hr | | - | - | 600 | - | - |
| mcg/kg/min | | 0.005 | 0.01 | - | 0.03 | 250 |
| mg/hr | | - | - | 16 | - | 250 |
| mg/hr | | - | - | 16 | - | - |
| mcg/kg/min | | 0.05 | 0.07 | 3 | - | 250 |
| mcg/kg/min | | 0.1 | 0.25 | 5 | 10 | - |
| mcg/kg/min | | 0.1 | 0.25 | 5 | 10 | - |
| mL/hr | | - | - | 120 | - | - |
| mcg/kg/min | | - | 0.03 | 0.9 | - | 250 |
| mcg/kg/min | | - | 0.03 | 0.9 | - | 250 |
| mcg/hr | | - | - | 150 | 250 | 256 |
| mL/hr | | - | - | - | 400 | 1,000 |
| mg/hr | | - | - | - | 5 | 50 |
| mL/hr | | - | - | 320 | - | 500 |
| mUnits/min | | - | - | 24 | 40 | 1,000 |
| mL/hr | | - | - | 999 | - | - |
| mL/hr | | - | - | 320 | - | 250 |
| mL/hr | | - | - | 25 | - | 500 |
| mL/hr | | - | - | 205 | - | 500 |
| mL/hr | | - | - | 150 | - | 100 |
| mL/hr | | - | - | 150 | - | 150 |
| mg/hr | | 7.9 | - | 8 | 799 | 100 |
| mL/hr | | - | - | 160 | - | 100 |
| mL/hr | | - | - | 960 | - | 100 |
| mg/kg/hr | | 0.1 | - | 3 | 5 | 250 |
| mL/hr | | - | - | 170 | - | 50 |
| mL/hr | | - | - | 578 | - | 250 |
| mL/hr | | - | - | 600 | - | 100 |
| mg/hr | | - | - | 15 | - | 250 |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|----------------------|--------------------|-----------------------------|----------------------|
| Phenylephrine | 200 mg | 250 | 0.8 mg/mL |
| Phenylephrine | 50 mg | 250 | 0.2 mg/mL |
| Phenytoin | - | - | mL mode |
| Phytonadione | - | - | Variable mg/mL |
| Potassium chloride | 20 mEq | 50 | 0.4 mEq/mL |
| Potassium chloride | 10 mEq | 100 | 0.1 mEq/mL |
| Potassium phosphate | 20 mmol | 250 | 0.08 mmol/mL |
| Potassium phosphate | 15 mmol | 250 | 0.06 mmol/mL |
| Potassium phosphate | 25 mmol | 500 | 0.05 mmol/mL |
| Potassium phosphate | 20 mmol | 500 | 0.04 mmol/mL |
| Potassium phosphate | 10 mmol | 250 | 0.04 mmol/mL |
| Premedication 150 mL | - | - | mL mode |
| Procainamide | 2,000 mg | 250 | 8 mg/mL |
| Propofol | 1,000 mg | 100 | 10 mg/mL |
| Ranitidine | 50 mg | 50 | 1 mg/mL |
| riTUXimab | - | - | 1 mg/mL |
| Rocuronium | 500 mg | 250 | 2 mg/mL |
| romiDEPsin | - | - | mL mode |
| Sargramostim (GMCSF) | - | - | mL mode |
| Sinacalide | - | - | mL mode |
| Sodium bicarbonate | - | - | 1 mEq/mL |
| Sodium bicarbonate | - | - | Variable mEq/mL |
| Sodium chloride 23.4 | - | - | mL mode |
| Sodium chloride 3% | - | - | mL mode |
| Sodium chloride 5% | - | - | mL mode |
| Sodium phosphate | 20 mmol | 250 | 0.08 mmol/mL |
| Sodium phosphate | 15 mmol | 250 | 0.06 mmol/mL |
| Sodium phosphate | 25 mmol | 500 | 0.05 mmol/mL |
| Sodium phosphate | 20 mmol | 500 | 0.04 mmol/mL |
| Sodium phosphate | 10 mmol | 250 | 0.04 mmol/mL |
| Streptozocin | - | - | mL mode |
| Tacrolimus | 5 mg | 250 | 0.02 mg/mL |
| TEMSIRolimus | - | - | mL mode |
| Teniposide 1,000 mL | - | - | mL mode |
| Teniposide 250 mL | - | - | mL mode |
| Teniposide 500 mL | - | - | mL mode |
| Thiotepa 50 mL | - | - | mL mode |
| Thiotepa 100 mL | - | - | mL mode |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|--------------------------|------------------|------------------|------------------|------------------|------------------|-------------------------|
| mcg/kg/min | | 0.2 | 0.5 | 3 | - | 250 |
| mcg/kg/min | | 0.2 | 0.5 | 3 | - | 250 |
| mL/hr | | - | - | 110 | - | - |
| mL/hr | - | - | - | - | 100 | 50 |
| mL/hr | | - | - | 60 | 105 | 50 |
| mL/hr | | - | - | - | 110 | 100 |
| mL/hr | | - | - | 70 | 140 | 250 |
| mL/hr | | - | - | 65 | 86 | 250 |
| mL/hr | | - | - | 86 | 125 | 500 |
| mL/hr | | - | - | 150 | 275 | 500 |
| mL/hr | | - | - | 65 | 86 | 250 |
| mL/hr | | - | - | - | 600 | 150 |
| mg/min | | 0.5 | - | 4 | 6 | 250 |
| mcg/kg/min | | - | 5 | 200 | 300 | 100 |
| mL/hr | | - | - | 215 | - | - |
| mL/hr | | - | - | - | 400 | - |
| mcg/kg/min | | 4 | - | 16 | - | 250 |
| mL/hr | | - | - | 150 | - | 500 |
| mL/hr | | - | - | 30 | - | 50 |
| mL/hr | | - | - | 60 | - | 30 |
| mL/hr | | - | - | 50 | - | - |
| mL/hr | - | - | - | 50 | - | - |
| mL/hr | | - | - | 120 | 180 | 30 |
| mL/hr | | - | - | - | 100 | - |
| mL/hr | | - | - | 120 | 180 | - |
| mL/hr | | - | - | 70 | 150 | 260 |
| mL/hr | | - | - | 65 | 86 | 250 |
| mL/hr | | - | - | 86 | 125 | 500 |
| mL/hr | | - | - | 150 | 275 | 500 |
| mL/hr | | - | - | 65 | 86 | 250 |
| mL/hr | | - | - | 240 | - | 100 |
| mcg/hr | | 10 | - | 120 | 200 | 250 |
| mL/hr | | - | - | 600 | - | 250 |
| mL/hr | | - | - | 999 | - | 1000 |
| mL/hr | | - | - | 640 | - | 250 |
| mL/hr | | - | - | 999 | - | 500 |
| mL/hr | | - | - | 263 | - | 50 |
| mL/hr | | - | - | 525 | - | 100 |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

(continued)

TABLE A-1. CONTINUOUS AND INTERMITTENT DOSING (CONTINUED)

| Drug | Drug Amount | Diluent Volume in mL | Concentration |
|-------------------------|--------------------|-----------------------------|----------------------|
| Thiotepa 250 mL | - | - | mL mode |
| Topotecan | - | - | mL mode |
| Torsemide | 100 mg | 100 | 1 mg/mL |
| TPN continuous | - | - | mL mode |
| TPN cycled | - | - | mL mode |
| TRASTuzumab over 30 min | - | - | mL mode |
| TRASTuzumab over 90 min | - | - | mL mode |
| Valproate sodium | - | - | mL mode |
| Vancomycin | - | - | Variable mg/mL |
| Vasopressin | 100 units | 100 | 1 units/mL |
| Vasopressin | 40 units | 40 | 1 units/mL |
| Vecuronium | - | - | 1 mg/mL |
| vinBLASTine-gravity | - | - | mL mode |
| vinCRISTine DOXOrub | | | mL mode |
| vinCRISTine lip MARQ | | | mL mode |
| vinCRISTine gravity | | | mL mode |
| vinoRELBine gravity | | | mL mode |
| Ziv-Aflibercept | | | Variable mg/mL |

CRRT = continuous renal replacement therapy, IR = interventional radiology, IVIG = intravenous immunoglobulin, LHL = lower hard limit, LSL = lower soft limit, PCI = percutaneous coronary intervention, PE = pulmonary embolism, UHL = upper hard limit, USL = upper soft limit.

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Dose Rate Dosing Unit | Dose Rate LHL | Dose Rate LSL | Starting Rate | Dose Rate USL | Dose Rate UHL | Volume to Be Infused |
|-----------------------|---------------|---------------|---------------|---------------|---------------|----------------------|
| mL/hr | | - | - | 999 | - | 250 |
| mL/hr | | - | - | 240 | - | 100 |
| mg/hr | | - | - | 20 | 40 | 100 |
| mL/hr | | - | - | 100 | 150 | - |
| mL/hr | | - | - | 250 | 300 | - |
| mL/hr | | - | - | 640 | - | 250 |
| mL/hr | | - | - | 215 | - | 250 |
| mL/hr | | - | - | 100 | - | 100 |
| mg/hr | - | - | - | 1700 | 2500 | - |
| Units/hr | | - | 0.5 | 2.5 | 10 | 100 |
| Units/hr | | - | 0.5 | 2.5 | 10 | 40 |
| mcg/kg/min | | 0.2 | - | 3 | 6 | - |
| mL/hr | | - | - | - | - | 25 |
| mL/hr | | - | - | 50 | - | 1,000 |
| mL/hr | | - | - | 120 | - | - |
| mL/hr | | - | - | - | - | 25 |
| mL/hr | | - | - | - | - | 25 |
| mL/hr | 0.6 | - | - | 290 | - | - |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-2. BOLUS DOSING

| Drug | Drug Amount | Diluent Volume (mL) | Concentration | Concentration Units |
|----------------------|--------------------|----------------------------|----------------------|----------------------------|
| Abciximab < 80 kg | 9 mg | 250 | 0.036 mg/mL | mg/mL |
| Abciximab ≥ 80 kg | 9 mg | 250 | 0.036 mg/mL | mg/mL |
| Acetaminophen | - | - | mL mode | |
| Alteplase PE | 100 mg | 100 | 1 mg/mL | mg/mL |
| Alteplase stroke | - | - | 1 mg/mL | mg/mL |
| BAD drip | - | - | mL mode | |
| Bivalirudin cath lab | 250 mg | 50 | 5 mg/mL | mg/mL |
| CisAtracurium | 200 mg | 100 | 2 mg/mL | mg/mL |
| dexMEDetomidine | 400 mcg | 100 | 4 mcg/mL | mcg/mL |
| dexMEDetomidine | 200 mcg | 50 | 4 mcg/mL | mcg/mL |
| Eptifibatide | 200 mg | 100 | 2 mg/mL | mg/mL |
| Esmolol | 2,000 mg | 100 | 20 mg/mL | mg/mL |
| Furosemide | 100 mg | 100 | 1 mg/mL | mg/mL |
| Heparin | 25,000 Units | 250 | 100 units/mL | Units/mL |
| IV MAINTenance fluid | - | - | mL mode | |
| Ketamine | - | - | 2 mg/mL | mg/mL |
| Ketamine | - | - | 1 mg/mL | mg/mL |
| Labetalol | 250 mg | 50 | 5 mg/mL | mg/mL |
| Lidocaine | 2 g | 250 | 0.008 g/mL | g/mL |
| LORazepam | 100 mg | 100 | 1 mg/mL | mg/mL |
| LORazepam | 50 mg | 50 | 1 mg/mL | mg/mL |
| Midazolam | 125 mg | 125 | 1 mg/mL | mg/mL |
| Nesiritide | 1.5 mg | 250 | 0.006 mg/mL | mg/mL |
| Octreotide | 1250 mcg | 250 | 5 mcg/mL | mcg/mL |
| Pantoprazole | 80 mg | 100 | 0.8 mg/mL | mg/mL |
| PENTobarbital | 2,000 mg | 250 | 8 mg/mL | mg/mL |
| Procainamide | 2,000 mg | 250 | 8 mg/mL | mg/mL |
| Propofol | 1,000 mg | 100 | 10 mg/mL | mg/mL |
| Rocuronium | 500 mg | 250 | 2 mg/mL | mg/mL |
| Valproate sodium | - | - | mL mode | |
| Vecuronium | - | - | 1 mg/mL | mg/mL |

LHL = lower hard limit, LSL = lower soft limit, PE = pulmonary embolism, UHL = upper hard limit, USL = upper soft limit.

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Bolus Dose Amount Unit | Bolus Starting Amount | Bolus Dose Amount USL | Bolus Dose Amount UHL | Bolus Time Unit | Bolus Time LHL | Bolus Time LSL | Bolus Time USL | Bolus Time UHL |
|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| mg | | | 20 | | | | | |
| mg | | | | | | | | |
| mL | | 100 | 150 | min | 10 | 15 | | |
| mg | | 10 | | min | 60 | | | |
| mg | | | 9 | min | | | | 1 |
| mL | | | 2 | min | | | | |
| mg | | 113 | | | | | | |
| mg | | 30 | | | | | | |
| mcg | | 150 | | min | 10 | | | |
| mcg | | 150 | | min | 10 | | | |
| mg | | | 22.6 | | | | | |
| mcg/kg | 100 | 500 | | | | | | |
| mg | | 80 | | | | | | |
| Units | | 6,000 | 9,999 | min | | | 6 | |
| mL | | | 1,000 | | | | | |
| mg/kg | | 0.25 | | min | | | 5 | |
| mg/kg | | 0.25 | | min | | | 5 | |
| mg | | 80 | | | | | | |
| mg | | 50 | | min | | 1 | | |
| mg | | 4 | | min | | 2 | 5 | |
| mg | | 4 | | min | | 2 | 5 | |
| mg | | 4 | | min | | 2 | 5 | |
| mcg/kg | 2 | | 2 | | | | | |
| mcg | | 50 | | min | | 5 | | |
| mg | | 80 | | min | | | 5 | |
| mg | | 300 | | | | | | |
| mg | | 1,700 | | min | | 5 | | |
| mg | | 30 | | sec | 30 | | | |
| mg | | 60 | | | | | | |
| mL | | 800 | | min | | 60 | | |
| mg | | 10 | | | | | | |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| Abciximab < 80 kg | P No S | Never | 101% | Medium |
| Abraxane | P or S | Optional | 101% | Medium |
| Abciximab ≥ 80 kg | P No S | Never | 101% | Medium |
| Acetaminophen | P or S | Never | 101% | Medium |
| Acetylcyste 6 g/500 mL | P or S | Optional | 101% | Medium |
| Acetylcysteine BAG 1 | P No S | Never | 101% | Medium |
| Acetylcysteine BAG 2 | P No S | Never | 101% | Medium |
| Acetylcysteine BAG 3 | P No S | Never | 101% | Medium |
| Acetylcysteine renal | P or S | Optional | 101% | Medium |
| ADO-trastuzumab | P or S | Optional | 101% | Medium |
| Aldesleukin | P or S | Optional | 101% | Medium |
| Alemtuzumab | P or S | Optional | 101% | Medium |
| Alprostadil | P No S | Never | 101% | Medium |
| Alteplase IR SH/RH | P No S | Never | 101% | Medium |
| Alteplase PE | P No S | Never | 101% | Medium |
| Alteplase stroke | P No S | Never | 101% | Medium |
| Amifostine | P or S | Optional | 101% | Medium |
| Aminocaproic ACID | P No S | Never | 101% | Medium |
| AMIODarone load | P No S | Never | 101% | Medium |
| AMIODarone | P No S | Never | 101% | Medium |
| Antibiotic 50 mL | P or S | Optional | 101% | Medium |
| Antibiotic 100 mL | P or S | Optional | 101% | Medium |
| Antibiotic 150 mL | P or S | Optional | 101% | Medium |
| Antibiotic 200 mL | P or S | Optional | 101% | Medium |
| Antibiotic 250 mL | P or S | Optional | 101% | Medium |
| Antibiotic 300 mL | P or S | Optional | 101% | Medium |
| Antibiotic 500 mL | P or S | Optional | 101% | Medium |
| Arsenic trioxide | P or S | Optional | 101% | Medium |
| Asparaginase | P or S | Optional | 101% | Medium |
| ATG (Atgam) 50 mL | P or S | Optional | 101% | Medium |
| ATG (Atgam) 100 mL | P or S | Optional | 101% | Medium |
| ATG (Atgam) 150 mL | P or S | Optional | 101% | Medium |
| ATG (Atgam) 250 mL | P or S | Optional | 101% | Medium |
| ATG (Atgam) 500 mL | P or S | Optional | 101% | Medium |
| azaCITIDine | P or S | Optional | 101% | Medium |
| BAD Drip | P or S | Optional | 101% | Medium |
| Banana bag | P or S | Optional | 101% | Medium |
| Basiliximab 50 mL | P or S | Optional | 101% | Medium |
| Bendamustine | P or S | Optional | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| BEVACizumab 30 min | P or S | Optional | 101% | Medium |
| BEVACizumab 60 min | P or S | Optional | 101% | Medium |
| BEVACizumab 90 min | P or S | Optional | 101% | Medium |
| Bilvalirudin non PCI | P No S | Never | 101% | Medium |
| Bilvalirudin cath lab | P No S | Never | 25% | Medium |
| Bleomycin | P or S | Optional | 101% | Medium |
| Blood products | P No S | Never | 101% | Medium |
| Bumetanide ICU | P No S | Never | 101% | Medium |
| Busulfan | P or S | Optional | 101% | Medium |
| Ca CHLORide CRRT | P or S | Optional | 101% | Medium |
| Ca GLUConate Dialysis | P or S | Optional | 101% | Medium |
| Cabazitaxel 250 mL | P or S | Optional | 101% | Medium |
| Cabazitaxel 500 mL | P or S | Optional | 101% | Medium |
| Caffeine-sodium benz | P or S | Never | 101% | Medium |
| Calcium CHLORide | P or S | Optional | 101% | Medium |
| Calcium GLUConate | P or S | Optional | 101% | Medium |
| CARBOplat desen 100 | P or S | Optional | 101% | Medium |
| CARBOplat desen 500 | P or S | Optional | 101% | Medium |
| CARBOplatin 250 mL | P or S | Optional | 101% | Medium |
| CARBOplatin 500 mL | P or S | Optional | 101% | Medium |
| CARBOplatin over 24 hr | P or S | Optional | 101% | Medium |
| Carfilzomib | P or S | Optional | 101% | Medium |
| Carmustine (BCNU) | P or S | Optional | 101% | Medium |
| CETuximab | P or S | Optional | 101% | Medium |
| chlorproMAZINE | P or S | Never | 101% | Medium |
| CisAtracurium | P No S | Never | 101% | Medium |
| CISplatin 1 mg/mL | P or S | Optional | 101% | Medium |
| CISplatin 1,000 mL | P or S | Optional | 101% | Medium |
| CISplatin 250 mL | P or S | Optional | 101% | Medium |
| CISplatin 500 mL | P or S | Optional | 101% | Medium |
| CISplatin man 250 mL | P or S | Never | 101% | Medium |
| CISplatin man 500 mL | P or S | Optional | 101% | Medium |
| CISplatin man 1,000 mL | P or S | Never | 101% | Medium |
| Cladribine | P or S | Optional | 101% | Medium |
| Clevidipine | P No S | Never | 101% | Medium |
| Clofarabine | P or S | Optional | 101% | Medium |
| Conivaptan load | P or S | Optional | 101% | Medium |
| Conivaptan | P No S | Never | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| CSA drip solid organ | P No S | Never | 101% | Medium |
| cycloPHOSPHAMIDE 250 | P or S | Optional | 101% | Medium |
| cycloPHOSPHAMIDE 500 | P or S | Optional | 101% | Medium |
| CYTarabine 100 mL | P or S | Optional | 101% | Medium |
| CYTarabine 250 mL/1 hr | P or S | Optional | 101% | Medium |
| CYTarabine 250 mL/2 hr | P or S | Optional | 101% | Medium |
| CYTarabine 250 mL/3 hr | P or S | Optional | 101% | Medium |
| CYTarabine cont inf | P or S | Optional | 101% | Medium |
| Cytogam | P or S | Never | 101% | Medium |
| Dacarbazine | P or S | Optional | 101% | Medium |
| Dantrolene | P or S | Optional | 101% | Medium |
| DAUNOrubicin | P or S | Optional | 101% | Medium |
| Daunoxome | P or S | Optional | 101% | Medium |
| Decitabine 100 mL | P or S | Optional | 101% | Medium |
| Decitabine 250 mL | P or S | Optional | 101% | Medium |
| Deferoxamine | P or S | Optional | 101% | Medium |
| Denileukin | P or S | Optional | 101% | Medium |
| Desmopressin | P or S | Optional | 101% | Medium |
| dexMEDetomidine | P No S | Never | 101% | Medium |
| Dexrazoxane (Totect) | P or S | Optional | 101% | Medium |
| Dexrazoxane Zinecard | P or S | Optional | 101% | Medium |
| Diltiazem | P No S | Never | 101% | Medium |
| DOBUtamine | P No S | Never | 101% | Medium |
| DOBUtamine echo | P No S | Never | 101% | Medium |
| DOCEtaxel 250 mL | P or S | Optional | 101% | Medium |
| DOCEtaxel 500 mL | P or S | Optional | 101% | Medium |
| DOPamine | P No S | Never | 101% | Medium |
| Doxil 250 mL | P or S | Optional | 101% | Medium |
| Doxil 500 mL | P or S | Optional | 101% | Medium |
| DOXOrubicin over 24 hr | P or S | Optional | 101% | Medium |
| DOXOrubicin | P or S | Optional | 101% | Medium |
| EPINEPHrine | P No S | Never | 101% | Medium |
| Epoprostenol PCI | P No S | Never | 101% | Medium |
| Eptifibatide | P No S | Never | 101% | Medium |
| Esmolol | P No S | Never | 101% | Medium |
| EtopoPHOS | P or S | Optional | 101% | Medium |
| Etoposide 250 mL | P or S | Optional | 101% | Medium |
| Etoposide 500 mL | P or S | Optional | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|-------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| Etoposide 1,000 mL | P or S | Optional | 101% | Medium |
| FentaNYL | P No S | Never | 101% | Medium |
| Ferric gluconate | P or S | Optional | 101% | Medium |
| Floxuridine | P or S | Optional | 101% | Medium |
| FLUdarabine | P or S | Optional | 101% | Medium |
| Fluorouracil | P or S | Optional | 101% | Medium |
| Foscarnet | P or S | Optional | 101% | Medium |
| Fosphenytoin | P or S | Optional | 101% | Medium |
| Furosemide | P No S | Never | 101% | Medium |
| Ganciclovir | P or S | Optional | 101% | Medium |
| Gemcitabine | P or S | Optional | 101% | Medium |
| Heparin | P No S | Never | 50% | Medium |
| Hetastarch | P No S | Never | 101% | Medium |
| HYDROMorphone | P No S | Never | 101% | Medium |
| Ibutilide | P or S | Optional | 101% | Medium |
| IDAruubicin | P or S | Optional | 101% | Medium |
| Ifosfamide + MESNA | P or S | Optional | 101% | Medium |
| Ifosfamide 100 mL | P or S | Optional | 101% | Medium |
| Ifosfamide 1,000 mL | P or S | Optional | 101% | Medium |
| Ifosfamide 250 mL | P or S | Optional | 101% | Medium |
| Insulin HIGH DOSE | P or S | Optional | 101% | Medium |
| Investigational drug | P or S | Never | 101% | Medium |
| Irinotecan 250 mL | P or S | Optional | 101% | Medium |
| Irinotecan 500 mL | P or S | Optional | 101% | Medium |
| Iron Dextran | P or S | Never | 101% | Medium |
| Iron SUCROSE | P or S | Optional | 101% | Medium |
| Isoproterenol | P No S | Never | 101% | Medium |
| Isoproterenol EP | P No S | Never | 101% | Medium |
| IVIG sucrose free | P No S | Never | 101% | Medium |
| IVIG sucrose | P No S | Never | 101% | Medium |
| IV MAINTenance fluid | P or S | Optional | 101% | Medium |
| IV MAINTenance with KCl | P or S | Optional | 101% | Medium |
| Ixabepilone | P or S | Optional | 101% | Medium |
| Ketamine | P or S | Never | 101% | Medium |
| Labetolol | P No S | Never | 101% | Medium |
| Lepirudin | P No S | Never | 60% | Medium |
| Leucovorin | P or S | Optional | 101% | Medium |
| levETIRAcetam | P or S | Optional | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| Lidocaine | P No S | Never | 101% | Medium |
| Lipids 20% | P No S | Never | 101% | Medium |
| Lipids anesthetic OD | P No S | Never | 101% | Medium |
| LORazepam | P No S | Never | 101% | Medium |
| Mag sul 4 g load | P or S | Optional | 101% | Medium |
| Mag sul 6 g load | P or S | Optional | 101% | Medium |
| Mag sulfate contin | P No S | Never | 101% | Medium |
| Mag sulfate seizure | P or S | Optional | 101% | Medium |
| Magnesium asthma | P or S | Optional | 101% | Medium |
| Magnesium replace | P or S | Optional | 101% | Medium |
| Mannitol 20% | P or S | Optional | 101% | Medium |
| Mannitol 25% | P or S | Optional | 101% | Medium |
| Melphalan | P or S | Optional | 101% | Medium |
| MESNA cont infusion | P or S | Optional | 101% | Medium |
| MESNA intermittent | P or S | Optional | 101% | Medium |
| METHOTREXate 1,000 mL | P or S | Optional | 101% | Medium |
| METHOTREXate 50 mL | P or S | Optional | 101% | Medium |
| METHOTX/bicarb 1 L | P or S | Optional | 101% | Medium |
| METHOTX/bicarb 500 mL | P No S | Never | 101% | Medium |
| methyLPRED sp load | P or S | Optional | 101% | Medium |
| methyLPRED spinal | P No S | Never | 101% | Medium |
| methyLPREDnisolone | P or S | Optional | 101% | Medium |
| Metoprolol | P or S | Optional | 101% | Medium |
| Midazolam seizure | P No S | Never | 101% | Medium |
| Midazolam | P No S | Never | 101% | Medium |
| Milrinone | P No S | Never | 101% | Medium |
| mitoXANtrone | P or S | Optional | 101% | Medium |
| Morphine | P No S | Never | 101% | Medium |
| Mycophenolate 500 mg | P or S | Optional | 101% | Medium |
| Mycophenolate 750 mg | P or S | Optional | 101% | Medium |
| Mycophenolate 1,000 mg | P or S | Optional | 101% | Medium |
| Mycophenolate 1,500 mg | P or S | Optional | 101% | Medium |
| Nelarabine | P or S | Optional | 101% | Medium |
| Nesiritide | P No S | Never | 101% | Medium |
| niCARDipine | P No S | Never | 101% | Medium |
| NitroGLYCERIN | P No S | Never | 101% | Medium |
| NitroPRUSSide | P No S | Never | 101% | Medium |
| Nivolumab | P or S | Never | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|-----------------------|---------------------|---------------------------|----------------------------------|--------------------|
| NOREPInephrine | P No S | Never | 101% | Medium |
| Octreotide | P No S | Never | 101% | Medium |
| Ofatumumab | P or S | Optional | 101% | Medium |
| Ondansetron drip | P or S | Optional | 101% | Medium |
| Oxaliplatin | P or S | Optional | 101% | Medium |
| Oxytocin labor | P No S | Never | 101% | Medium |
| Oxytocin post part | P w S | Never | 101% | Medium |
| PACLitaxel over 1 hr | P or S | Optional | 101% | Medium |
| PACLitaxel over 24 hr | P or S | Optional | 101% | Medium |
| PACLitaxel over 3 hr | P or S | Optional | 101% | Medium |
| Panitumumab 100 mL | P or S | Optional | 101% | Medium |
| Panitumumab 150 mL | P or S | Optional | 101% | Medium |
| Pantoprazole | P No S | Never | 101% | Medium |
| Pegaspargase | P or S | Optional | 101% | Medium |
| PEMEtrexed | P or S | Optional | 101% | Medium |
| PENTobarbital | P No S | Never | 101% | Medium |
| Pentostatin | P or S | Optional | 101% | Medium |
| Pertuzumab | P or S | Never | 101% | Medium |
| PHENobarbital seizure | P or S | Optional | 101% | Medium |
| PHENobarbital | P No S | Never | 101% | Medium |
| Phenylephrine | P No S | Never | 101% | Medium |
| Phenytoin | P or S | Never | 101% | Medium |
| Phytonadione | P or S | Optional | 101% | Medium |
| Potassium chloride | P or S | Optional | 101% | Medium |
| Potassium phosphate | P or S | Optional | 101% | Medium |
| Premedication 150 mL | P or S | Optional | 101% | Medium |
| Procainamide | P No S | Never | 101% | Medium |
| Propofol | P No S | Never | 101% | Medium |
| Ranitidine | P or S | Optional | 101% | Medium |
| riTUXimab | P or S | Optional | 101% | Medium |
| Rocouronium | P No S | Never | 101% | Medium |
| romiDEPsin | P or S | Optional | 101% | Medium |
| Sargramostim (GMCSF) | P or S | Never | 101% | Medium |
| Sinacalide | P or S | Optional | 101% | Medium |
| Sodium bicarbonate | P or S | Optional | 101% | Medium |
| Sodium chloride 23.4 | P No S | Never | 101% | Medium |
| Sodium chloride 3% | P or S | Optional | 101% | Medium |
| Sodium chloride 5% | P or S | Optional | 101% | Medium |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-3. DRUG PROPERTIES AND DELIVERY METHODS (CONTINUED)

| Drug | Delivery Bag | Secondary Callback | Single Step Rate Increase | Audio Level |
|-------------------------|---------------------|---------------------------|----------------------------------|--------------------|
| Sodium phosphate | P or S | Optional | 101% | Medium |
| Streptozocin | P or S | Optional | 101% | Medium |
| Tacrolimus | P No S | Never | 101% | Medium |
| TEMSIRolimus | P or S | Optional | 101% | Medium |
| Teniposide 1,000 mL | P or S | Optional | 101% | Medium |
| Teniposide 250 mL | P or S | Optional | 101% | Medium |
| Teniposide 500 mL | P or S | Optional | 101% | Medium |
| Thiotepa 50 mL | P or S | Optional | 101% | Medium |
| Thiotepa 100 mL | P or S | Optional | 101% | Medium |
| Thiotepa 250 mL | P or S | Optional | 101% | Medium |
| Topotecan | P or S | Optional | 101% | Medium |
| Torsemide | P or S | Optional | 101% | Medium |
| TPN continuous | P No S | Never | 101% | Medium |
| TPN cycled | P No S | Never | 101% | Medium |
| TRASTuzumab over 30 min | P or S | Optional | 101% | Medium |
| TRASTuzumab over 90 min | P or S | Optional | 101% | Medium |
| Valproate sodium | P or S | Optional | 101% | Medium |
| Vancomycin | P or S | Optional | 101% | Medium |
| Vasopressin | P No S | Never | 101% | Medium |
| Vecuronium | P No S | Never | 50% | Medium |
| vinBLAStine gravity | P or S | Optional | 101% | Medium |
| vinCRISTine DOXOrub | P or S | Optional | 101% | Medium |
| vinCRISTine lip MARQ | P or S | Optional | 101% | Medium |
| vinCRISTine gravity | P or S | Optional | 101% | Medium |
| vinoRELBine gravity | P or S | Optional | 101% | Medium |
| Ziv-Aflibercept | P or S | Never | 101% | Medium |

P or S = primary or secondary, P No S = primary no secondary.

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

| Bag Near Empty Alarm | Completion Alarms | Upstream Occlusion Suspend | Default KVO Rate (mL/hr) | Delay Run | Clinical Advisory |
|----------------------|-------------------|----------------------------|--------------------------|-----------|-------------------|
| Off | Off | Off | Off | Off | Off |
| Off | Off | Off | Off | Off | Off |
| Off | Off | Off | Off | Off | Off |
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| Off | Off | Off | Off | Off | Off |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.

TABLE A-4. EXAMPLES OF CLINICAL ADVISORIES

| Medication | Clinical Advisory |
|-----------------------|--|
| Abatacept | Infuse through 0.2–1.2 micron filter |
| Abraxane | Not compatible with D5W |
| Aldesleukin | Compatible with D5W only |
| Agalsidase | Infuse through 0.22-micron filter |
| Aralast | Infuse with filter provided by manufacturer |
| azaCITIDine | Compatible with saline only |
| Bendamustine | Compatible with saline only |
| BEVACizumab | Compatible with saline only |
| Bleomycin | Compatible with saline only |
| Cabazitaxel | Administer with in-line filter |
| CETuximab | Administer with in-line filter |
| Cladribine | Compatible with saline only |
| Daunoxome | Compatible with D5W |
| Doxil | Compatible with D5W |
| DOXOrubicin | Vesicant |
| Filgrastim | When administering use only D5W |
| Ganciclovir | Requires cytotoxic handling precautions for administration and body fluids |
| Idursulfase | Infuse through 0.22-micron filter |
| Ixabepilone | Compatible only with LR |
| LORazepam | Use in-line filter |
| Magnesium sulfate | High risk drug requires double check |
| mitoXANtrone | Infuse in freely running NS or D5W line |
| Naloxone mcg/kg/hr | Dose in mcg/kg/hr |
| Naloxone mg/hr | Dose in mg/hr |
| Ofatumumab | Administer with in-line filter |
| Oxaliplatin | Compatible with D5W only |
| Panitumumab | Administer with in-line filter |
| PENTobarbital | Avoid extravasation |
| PHENobarbital | Max rate 50 mg/min |
| Sodium chloride 23.4% | Central line only |
| Thymoglobulin | Filter required |

Source: Used with permission from Fairview Health Services, Minneapolis, Minnesota.