

# **POCKET GUIDE TO INJECTABLE DRUGS**

BY  
LAWRENCE  
A. TRISSEL

*published by the*



**1981**

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## How to Use the Pocket Guide

The *Pocket Guide to Injectable Drugs* is an easy-to-use and highly portable reference source for reliable information about some of the most frequently used injectable drug products. The book should be useful to busy nurses, pharmacists, and physicians in the hospital setting. The information has been distilled from over 500 primary published research reports on the stability and compatibility of injectables. The results of these reports have been simplified as brief and graphic representations in the *Pocket Guide*.

### Organization of the Pocket Guide

The information in the *Pocket Guide to Injectable Drugs* is organized in monographs for 76 drug products. The monographs are arranged alphabetically by nonproprietary name. (Nonproprietary names and many corresponding trade names are cross-referenced at the end of the book.)

The information is an abbreviated version of the parent publication, the *Handbook on Injectable Drugs*. The first item for each drug refers to the related *Handbook* monograph. This allows easy reference back to the *Handbook* to locate a more complete summary of the literature. Also, the primary published sources can be identified from the *Handbook*. In addition, the *American Hospital Formulary Service Classification System* numbers have been included to facilitate the location of therapeutic information on the drugs.

The monographs have been divided into the following subheadings:

**Description**—a brief statement describing the agent.

**Trade Names**—lists some trade names of the agent. (This is not necessarily a comprehensive list and should not be considered an endorsement of any product.)

**Concentration**—lists many of the sizes, strengths, and volumes in which the drug is supplied. In addition, any instructions for reconstitution are included here.

**Stability**—a brief statement about important stability considerations for the drug.

**Dosage**—gives the recommended dosage and routes of administration, primarily from the official labeling and the *American Hospital Formulary Service*.

**Compatibility Table**—indicates the results of published reports regarding compatibility, incompatibility, or conditional or equivocal results with other drugs or solutions.

### **Organization of the Compatibility Tables**

The Compatibility Tables are composed of two parts—IV infusion solutions and drugs. The listing of IV infusion solutions is, of necessity, brief. For the most part, only the most common solutions are noted. Therefore, the absence of a solution does not imply either compatibility or incompatibility. The listings of the drugs are more comprehensive reflecting most of the drug combinations that have been studied.

The various entries, whether IV infusion solutions or drugs, have been designated “Compatible”, “Incompatible” or “Conditional/Equivocal” in the *Pocket Guide* based on how the drug was tabulated in the *Handbook of Injectable Drugs*. The drug or solution is listed as Compatible if one or more of the following was indicated:

- 1) Physical compatibility (no visible sign of incompatibility).
- 2) Stability of components for at least 24 hours in an IV solution (decomposition of 10% or less) under the test conditions.
- 3) Stability of components for the entire test period, although in some cases this was less than 24 hours.

The items are noted as Incompatible if one or both of the following was indicated:

- 1) Physical incompatibility (haze, precipitate, color change, etc.)
- 2) Greater than 10% decomposition of one or more components in an intravenous solution within 24 hours or less under the test conditions.

The items are noted as Conditional/Equivocal if either of the following was indicated:

- 1) Compatibility characteristics are dependent on certain specific conditions.
- 2) Contradictory information is present regarding the compatibility or incompatibility of the combination.

Therapeutic incompatibilities or other drug interactions are not included in the *Pocket Guide*.

### Limitations

The *Pocket Guide to Injectable Drugs* is handy and convenient to use. It is also quite obviously (and intentionally) brief. The user should note that some important data, such as drug concentrations, storage conditions, the exact nature of the results, are not included. A thorough and complete evaluation of compatibility and stability considerations would require examination in some greater detail than is presented here. With this in mind, it is suggested that the *Pocket Guide* be used as a portable companion to the *Handbook on Injectable Drugs*. The *Handbook* can then be used as a basis for providing a more thorough evaluation, should that be desired.

## **Contents**

How to Use the Pocket Guide .....	v
Monographs .....	1
Index .....	153

# **Monographs**



# Amikacin Sulfate

*Handbook on Injectable Drugs* pp. 4-14.

**AHFS 8:12.28**

**Description:** Amikacin sulfate is a semisynthetic aminoglycoside antibiotic. Its bactericidal action results from the inhibition of protein synthesis.

**Trade Name:** Amikin

**Concentration:** 50 mg/ml in 2-ml vials; 250 mg/ml in 2-ml and 4-ml vials.

**Stability:** The solution may darken in color because of air oxidation, but this does not affect potency.

**Dosage:** The usual dose is 15 mg/kg/day in two or three equal doses, IM or IV. In newborns, a loading dose of 10 mg/kg is followed by 7.5 mg/kg every 12 hours. The total daily dose should not exceed 15 mg/kg/day. Impaired renal function requires reduced dosage. Infuse over 30 to 60 minutes in adults and children. Infants should receive a 1 to 2 hour infusion.

## Compatibility Table

Solutions	Compatible	Incompatible	Conditional/ Equivocal
Dextrose 5% in Ringer's inj. ....	●	...	...
Dextrose 5% in Ringer's injection lactated .....	●	...	...
Dextrose 5% in sodium chloride 0.2%, 0.45% and 0.9% .....	●	...	...
Dextrose 5% in water .....	●	...	...
Sodium chloride 0.45% & 0.9% .	●	...	...

Drugs	Compatible	Incompatible	Conditional/ Equivocal
Aminophylline .....	...	...	●
Amphotericin B .....	...	●	...
Ampicillin sodium .....	...	●	...
Ascorbic acid injection .....	●	...	...
Calcium chloride & gluconate ...	●	...	...

Drugs	Compatible	Incompatible	Conditional/ Equivocal
Carbenicillin disodium .....	...	...	•
Cefazolin sodium .....	...	•	...
Cefoxitin sodium .....	•	...	...
Cephalothin sodium .....	...	•	...
Cephapirin sodium .....	...	•	...
Chlorphenicol sod. succ. ....	•	...	...
Chlorothiazide sodium .....	...	•	...
Chlorpheniramine maleate .....	•	...	...
Clindamycin phosphate .....	•	...	...
Colistimethate sodium .....	•	...	...
Dexamethasone sod. phos. ....	...	...	•
Diphenhydramine HCl .....	•	...	...
Epinephrine HCl .....	•	...	...
Erythromycin gluceptate .....	...	...	•
Heparin sodium .....	...	•	...
Hydrocortisone sod. phos. ....	•	...	...
Hydrocortisone sod. succ. ....	•	...	...
Levarterenol bitartrate .....	•	...	...
Lincomycin HCl .....	•	...	...
Metaraminol bitartrate .....	•	...	...
Methicillin sodium .....	...	•	...
Oxacillin sodium .....	...	...	•
Oxytetracycline HCl .....	...	...	•
Penicillin G potassium .....	...	...	•
Pentobarbital sodium .....	•	...	...
Phenobarbital sodium .....	•	...	...
Polymyxin B sulfate .....	•	...	...
Prochlorperazine edisylate .....	•	...	...
Promethazine HCl .....	•	...	...
Secobarbital sodium .....	•	...	...
Sodium bicarbonate .....	•	...	...
Succinylcholine chloride .....	•	...	...
Sulfadiazine sodium .....	...	•	...
Sulfisoxazole diolamine .....	...	...	•
Tetracycline HCl .....	...	...	•
Thiopental sodium .....	...	•	...
Vancomycin HCl .....	•	...	...
Vitamin B complex with C .....	...	•	...
Warfarin sodium .....	...	•	...

# Aminophylline

*Handbook on Injectable Drugs* pp. 26-32.

**AHFS 86:00**

**Description:** Aminophylline is the ethylenediamine salt of theophylline. It acts to relax smooth muscle of the respiratory tract producing relief of bronchospasm and increasing flow rates and vital capacity.

**Trade Name:** Aminophyllin

**Concentration:** 10-ml (250 mg) and 20-ml (500 mg) ampuls for IV injection. Also 2-ml (500 mg) ampuls for IM use.

**Dosage:** The usual adult dose is 250 to 500 mg IV or 500 mg IM. The rate of IV administration should not exceed 25 mg (1 ml)/minute. Alternate dosage regimens using a loading dose of 5.4 to 7 mg/kg followed by a maintenance infusion of 0.6 mg to 0.9 mg/kg/hour have been used.

## Compatibility Table

Solutions	Compatible	Incompatible	Conditional/ Equivocal
Dextrose 5% in Ringer's injection .....	●	...	...
Dextrose 5% in Ringer's injection, lactated .....	●	...	...
Dextrose 5% in sodium chloride 0.2%, 0.45% and 0.9% .....	●	...	...
Dextrose 5% in water .....	●	...	...
Invert sugar 10% in sodium chloride 0.9% .....	...	●	...
Invert sugar 10% in water .....	...	●	...
Sodium chloride 0.45% & 0.9% ..	●	...	...

Drugs	Compatible	Incompatible	Conditional/ Equivocal
Amikacin sulfate .....	...	...	●
Ascorbic acid injection .....	...	...	●
Calcium gluconate .....	●	...	...
Cephalothin sodium .....	...	●	...
Cephapirin sodium .....	...	...	●

Drugs	Compatible	Incompatible	Conditional/ Equivocal
Chloramphenicol sod. succ. ....	●	...	...
Chlorpromazine HCl .....	...	●	...
Cimetidine HCl .....	...	●	...
Clindamycin phosphate .....	...	●	...
Codeine phosphate .....	...	●	...
Diphenhydramine HCl .....	●	...	...
Epinephrine HCl .....	...	●	...
Erythromycin gluceptate .....	...	●	...
Erythromycin lactobionate .....	●	...	...
Heparin sodium .....	●	...	...
Hydralazine HCl .....	...	●	...
Hydrocortisone sod. succ. ....	●	...	...
Hydroxyzine HCl .....	...	●	...
Insulin, regular .....	...	●	...
Isoproterenol HCl .....	...	●	...
Levarterenol bitartrate .....	...	●	...
Lidocaine HCl .....	●	...	...
Meperidine HCl .....	...	●	...
Methadone HCl .....	...	●	...
Methyldopate HCl .....	●	...	...
Methylprednisolone sod. succ. ..	...	...	●
Morphine sulfate .....	...	●	...
Nafcillin sodium .....	...	...	●
Oxytetracycline HCl .....	...	...	●
Penicillin G potassium .....	...	●	...
Pentazocine lactate .....	...	●	...
Pentobarbital sodium .....	●	...	...
Phenobarbital sodium .....	●	...	...
Potassium chloride .....	●	...	...
Procaine HCl .....	...	...	●
Prochlorperazine edisylate .....	...	●	...
Promazine HCl .....	...	●	...
Promethazine HCl .....	...	●	...
Secobarbital sodium .....	●	...	...
Sodium bicarbonate .....	●	...	...
Sodium iodide .....	●	...	...
Sulfadiazine sodium .....	●	...	...
Sulfisoxazole diolamine .....	...	●	...
Tetracycline HCl .....	...	●	...
Thiopental sodium .....	●	...	...
Vancomycin HCl .....	...	...	●
Vitamin B complex with C .....	...	●	...

# Amphotericin B

*Handbook on Injectable Drugs* pp. 38-42.

**AHFS 8:12.04**

**Description:** Amphotericin B is a fungistatic antibiotic. It exerts its antifungal effect by binding to components of the fungal cell wall which renders the membrane nonfunctional as a selective barrier.

**Trade Name:** Fungizone Intravenous

**Concentration:** 50 mg per vial. Reconstitute with 10 ml of sterile water for injection without preservatives and shake to yield a 5 mg/ml colloidal dispersion. **NOTE:** Other diluents such as sodium chloride 0.9% and those with preservatives may cause precipitation.

**Stability:** The reconstituted solution is stable for at least 24 hours at room temperature and one week under refrigeration.

**Dosage:** Administer by slow IV infusion over approximately six hours. A concentration of 0.1 mg/ml is recommended. The usual initial dose is 0.25 mg/kg increased as patient tolerance permits. The total daily dosage should not exceed 1.5 mg/kg.

## Compatibility Table

Solutions	Compatible	Incompatible	Conditional/ Equivocal
Dextrose 5% in sodium chloride 0.2% .....	●	...	...
Dextrose 5% in water .....	●	...	...
Sodium chloride 0.9% .....	...	●	...

### Drugs

Amikacin sulfate .....	...	●	...
Calcium chloride .....	...	●	...
Calcium gluconate .....	...	●	...
Carbenicillin disodium .....	...	●	...
Chlorpromazine HCl .....	...	●	...

Drugs	Compatible	Incompatible	Conditional/ Equivocal
Diphenhydramine HCl .....	...	●	...
Dopamine HCl .....	...	●	...
Edetate calcium disodium .....	...	●	...
Gentamicin sulfate .....	...	●	...
Heparin sodium .....	●	...	...
Hydrocortisone sodium succinate .....	●	...	...
Kanamycin sulfate .....	...	●	...
Lidocaine HCl .....	...	●	...
Metaraminol bitartrate .....	...	●	...
Methyldopate HCl .....	...	●	...
Oxytetracycline HCl .....	...	●	...
Penicillin G potassium .....	...	●	...
Penicillin G sodium .....	...	●	...
Polymyxin B sulfate .....	...	●	...
Potassium chloride .....	...	●	...
Procaine HCl .....	...	●	...
Prochlorperazine mesylate .....	...	●	...
Streptomycin sulfate .....	...	●	...
Tetracycline HCl .....	...	●	...

# Ampicillin Sodium

*Handbook on Injectable Drugs* pp. 42-55.

**AHFS 8:12.16**

**Description:** Ampicillin sodium is a semisynthetic penicillin with a broad spectrum of antibacterial activity. The antibacterial action results from interference with the synthesis or maintenance of the bacterial cell wall.

**Trade Names:** Available under a variety of trade names.

Common ones include: Amcill-S, Omnipen-N, Penbritin-N, Polycillin-N, Totacillin-N

**Concentration:** For intramuscular use reconstitute with sterile water for injection or bacteriostatic water for injection. Reconstitution volumes vary slightly with the brand of drug. For Polycillin-N the following amounts are recommended:

Vial Size	Volume Diluent	Concentration
125 mg	1.2 ml	125 mg/ml
250 mg	1.0 ml	250 mg/ml
500 mg	1.8 ml	250 mg/ml
1.0 g	3.5 ml	250 mg/ml
2.0 g	6.8 ml	250 mg/ml

For intravenous use, reconstitute the 125-mg, 250-mg and 500-mg vials with 5 ml of sterile water for injection. The 1.0-g and 2.0-g vials use 7.4 ml and 14.8 ml, respectively.

**Stability:** The reconstituted solution is stable for at least one hour at room temperature and four hours under refrigeration.

**Dosage:** May be administered IM, by IV infusion or by direct IV injection slowly over 10 to 15 minutes.

The usual adult dose ranges from 250 to 500 mg every 6 hours up to 8 to 14 g/day or 150 to 200 mg/kg/day in six to eight divided doses. In children doses range from 25 to 50 mg/kg/day in 3 or 4 divided doses to 100 to 200 mg/kg/day in 6 to 8 divided doses.

## Compatibility Table

Solutions	Compatible	Incompatible	Conditional/ Equivocal
Dextrose 5% in sodium chloride			
0.45%* .....	...	●	...
Dextrose 5% in sodium chloride			
0.9% .....	...	●	...
Dextrose 5% in water* .....	...	●	...
Dextrose 10% in water .....	...	●	...
Ringer's injection .....	●	...	...
Ringer's injection, lactated* .....	...	...	●
Sodium chloride 0.9% .....	●	...	...

\*Although room temperature stability in these solutions is insufficient to be considered truly compatible, the drug is sufficiently stable to permit use within a few hours.

### Drugs

Amikacin sulfate .....	...	●	...
Cephaloridine .....	●	...	...
Chloramphenicol sodium succinate .....	●	...	...
Chlorpromazine HCl .....	...	●	...
Clindamycin phosphate .....	...	●	...
Cimetidine HCl .....	●	...	...
Colistimethate sodium .....	●	...	...
Dopamine HCl .....	...	●	...
Erythromycin ethyl succinate .....	...	●	...
Erythromycin lactobionate .....	...	●	...
Gentamicin sulfate .....	...	●	...
Heparin sodium .....	...	...	●
Hydralazine HCl .....	...	●	...
Hydrocortisone sodium succinate .....	...	...	●
Kanamycin sulfate .....	...	●	...
Lidocaine HCl .....	...	...	●
Lincomycin HCl .....	...	...	●
Oxytetracycline .....	...	●	...
Oxytetracycline HCl .....	...	●	...
Polymyxin B sulfate .....	...	...	●
Procaine HCl .....	●	...	...
Prochlorperazine edisylate .....	...	●	...
Streptomycin sulfate .....	...	...	●
Tetracycline HCl .....	...	●	...



# Ascorbic Acid Injection

*Handbook on Injectable Drugs* pp. 56-59.

AHFS 88:12

**Description:** Ascorbic acid (vitamin C) is a water-soluble vitamin. In humans, an exogenous source of ascorbic acid is required. Deficiency of the vitamin results in scurvy.

**Trade Names:** Cevalin, Cenolate

**Concentration:** Available in a variety of sizes and concentrations from various manufacturers including 100 mg/2 ml, 500 mg/1 ml and 1 g/10ml.

**Stability:** A slight color may develop during storage, but this does not affect the therapeutic activity.

Pressure may build up during storage of the ampuls because of the formation of carbon dioxide. At room temperature the pressure may become excessive. When opening ascorbic acid injection the ampuls should be wrapped in a protective covering.

**Dosage:** May be administered IV, IM or SC. The average protective dose in infants is 30 mg daily, with the curative dose ranging from 100 to 300 mg/day. Premature infants may require 75 to 100 mg daily. In adults, the average protective dose is 70 to 150 mg daily. In the treatment of scurvy, doses of 300 mg to 1 g/day are recommended.

## Compatibility Table

Solutions	Compatible	Incompatible	Conditional/ Equivocal
Dextrose 5% in Ringer's injection.....	●	...	...
Dextrose 5% in Ringer's injection, lactated.....	●	...	...
Dextrose 5% in sodium chloride 0.2%, 0.45% and 0.9%.....	●	...	...