DESCRIPTION:
Vancomycin Hydrochloride for Injection, USP is a lyophilized powder, for preparing intravenous (IV) infusions, in vials containing the equivalent of 500 mg or 1 g vancomycin base. 500 mg of the base are equivalent to 0.34 mmol. When reconstituted with Sterile Water for Injection to a concentration of 50 mg/mL, the pH of the solution is between 2.5 and 4.5. Vancomycin Hydrochloride for Injection, USP should be administered intravenously in diluted solution (see DOSAGE AND ADMINISTRATION; FURTHER DILUTION IS REQUIRED BEFORE USE).

Vancomycin is a tricyclic glycopeptide antibiotic derived from Arincolatopsis orientalis (formerly Nocardia orientalis). Vancomycin hydrochloride has the following structural formula:

C₃₄H₅₁Cl₂N₁₀O₁₀.HCl  M.W. 1485.73

CLINICAL PHARMACOLOGY:
Vancomycin is poorly absorbed after oral administration.

In subjects with normal kidney function, multiple IV dosing of 1 g of vancomycin (15 mg/kg) infused over 60 minutes produces mean plasma concentrations of approximately 63 mcg/mL immediately at the completion of infusion; mean plasma concentrations of approximately 23 mcg/mL two hours after infusion, and mean plasma concentrations of approximately 6 mcg/mL 11 hours after the end of the infusion. Multiple dosing of 500 mg infused over 30 minutes produces mean plasma concentrations of about 49 mcg/mL at the completion of infusion, mean plasma concentrations of about 19 mcg/mL two hours after infusion, and mean plasma concentrations of about 10 mcg/mL six hours after infusion. The plasma concentrations during multiple dosing are similar to those after a single dose.

The mean elimination half-life of vancomycin from plasma is four to six hours in subjects with normal renal function. In the first 24 hours, about 75% of an administered dose of vancomycin is excreted in urine by glomerular filtration. Mean plasma clearance is about 0.058 L/kg/hr, and mean renal clearance is about 0.048 L/kg/hr. Renal dysfunction slows the excretion of vancomycin. In anephric patients, the average half-life of elimination is 7.5 days. The distribution coefficient is from 0.3 to 0.43 L/kg. There is no apparent metabolism of the drug. About 60% of an intraperitoneal dose of vancomycin administered during peritoneal dialysis is absorbed systemically in six hours. Serum concentrations of about 10 mcg/mL are achieved by intraperitoneal injection of 30 mg/kg of vancomycin. Vancomycin is not effectively removed by either hemodialysis or peritoneal dialysis, there have been no reports of vancomycin clearance with hemoperfusion.

Total systemic and renal clearance of vancomycin may be reduced in the elderly.

Vancomycin is approximately 55% serum protein bound as measured by ultrafiltration at vancomycin serum concentrations of 10 to 100 mcg/mL. After IV administration of vancomycin inhibitory concentrations are present in pleural, pericardial, ascitic and synovial fluids; in urine; in peritoneal dialysis fluid; and in atrial appendage tissue. Vancomycin does not readily diffuse across normal meninges into the spinal fluid; but, when the meninges are inflamed, penetration into the spinal fluid occurs.

Microbiology
The bactericidal action of vancomycin results primarily from inhibition of cell-wall biosynthesis. In addition, vancomycin alters bacterial-cell membrane permeability and RNA synthesis. There is no cross-resistance between vancomycin and other antibiotics. Vancomycin is not active in vitro against gram-negative bacilli, mycobacteria, or fungi.

Synergy
The combination of vancomycin and an aminoglycoside acts synergistically against many strains of Staphylococcus aureus, Streptococcus bovis, enterococci, and the viridans group streptococci.

Vancomycin has been shown to be active against most strains of the following microorganisms, both in vitro and in infections, as described in INDICATIONS AND USAGE.

Aerobic gram-positive microorganisms
Diphtheroids
Enterococci (e.g., Enterococcus faecalis)
Staphylococci, including Staphylococcus aureus and Staphylococcus epidermidis (including heterogeneous methicillin-resistant strains)
Streptococcus bovis
Viridans group streptococci

The following in vitro data are available, but their clinical significance is unknown.

Vancomycin exhibits in vitro MICs of 1 mcg/mL or less against most (≥90%) strains of streptococci listed below and MICs of 4 mcg/mL or less against most (≥90%) strains of other listed microorganisms; however, the safety and effectiveness of vancomycin in treating clinical infections due to these microorganisms have not been established in adequate and well-controlled clinical trials.

Aerobic gram-positive microorganisms
- Listena monocytogenes
- Streptococcus pyogenes
- Streptococcus pneumoniae (including penicillin-resistant strains)
- Streptococcus agalactiae

Anaerobic gram-positive microorganisms
Actinomycetes species
Lactobacillus species

Susceptibility Tests
Dilution Techniques
Quantitative methods are used to determine antimicrobial minimum inhibitory concentrations (MICs). These MICs provide estimates of the susceptibility of bacteria to antimicrobial compounds. The MICs should be determined using a standardized procedure. Standardized procedures are based on a dilution method (broth or agar) or equivalent with standardized inoculum concentrations and standardized concentrations of vancomycin powder. The MIC values should be interpreted according to the following criteria:

For testing aerobic microorganisms other than streptococci:

<table>
<thead>
<tr>
<th>MIC (mcg/mL)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 4</td>
<td>Susceptible (S)</td>
</tr>
<tr>
<td>8 to 16</td>
<td>Intermediate (I)</td>
</tr>
<tr>
<td>≥ 32</td>
<td>Resistant (R)</td>
</tr>
</tbody>
</table>

For testing streptococci other than Streptococcus pneumoniae:

<table>
<thead>
<tr>
<th>MIC (mcg/mL)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 1</td>
<td>Susceptible (S)</td>
</tr>
</tbody>
</table>

* A β-lactamase test using an inoculum ≥ 10⁵ CFU/mL (of direct colony growth) and a nitrocefin-based substrate should be performed to detect either ampicillin or penicillin resistance among enterococci due to β-lactamase production.

The current absence of data on resistant strains precludes defining any categories other than “Susceptible.” Strains yielding MIC results suggestive of a “nonsusceptible” category should be submitted to a reference laboratory for further testing. A report of “Susceptible” indicates that the pathogen is likely to be inhibited if the antimicrobial compound is used in bacterial infections. The concentrations usually achievable. A report of “Intermediate” indicates that the result should be considered equivocal, and, if the microorganism is not fully susceptible to alternative, clinically feasible drugs, the test should be repeated. This category implies possible clinical applicability in body sites where the drug is physiologically concentrated or in situations where high doses of drug can be used. This category also provides a buffer which prevents small uncontrolled technical factors from causing major discrepancies in interpretation. A report of “Resistant” indicates that the pathogen is not likely to

45810G.Revised: April 2011

VANCOMYCIN HYDROCHLORIDE FOR INJECTION, USP

Rx only

To reduce the development of drug-resistant bacteria and maintain the effectiveness of Vancomycin Hydrochloride for Injection, USP and other antibacterial drugs, Vancomycin Hydrochloride for Injection, USP should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

WARNINGS:
Amoxicillin, ampicillin, or penicillin resistance among enterococci can range in severity from mild diarrhea to pseudomembranous colitis after multiple oral doses. All antibacterial agents, including vancomycin, may range in severity from mild diarrhea to pseudomembranous colitis after administration. To date, all have been self-limited and ranged from cloudy dialysate initially, after dialysate changes to whitish turbidity. Reports of chemical peritonitis that developed after administration are proven or strongly suspected to be caused by pathogens that are resistant to other drugs in the future. The current absence of data on resistant strains precludes defining any categories other than “Susceptible”.

The current absence of data on resistant strains precludes defining any categories other than “Susceptible.” Strains yielding MIC results suggestive of a “nonsusceptible” category should be submitted to a reference laboratory for further testing. A report of “Susceptible” indicates that the pathogen is likely to be inhibited if the antimicrobial compound is used in bacterial infections. The concentrations usually achievable. A report of “Intermediate” indicates that the result should be considered equivocal, and, if the microorganism is not fully susceptible to alternative, clinically feasible drugs, the test should be repeated. This category implies possible clinical applicability in body sites where the drug is physiologically concentrated or in situations where high doses of drug can be used. This category also provides a buffer which prevents small uncontrolled technical factors from causing major discrepancies in interpretation. A report of “Resistant” indicates that the pathogen is not likely to
be inhibited if the antimicrobial compound in the blood reaches the concentrations usually achieved during therapy, or if the treatment is modified. Standardized susceptibility test procedures require the use of laboratory control microorganisms to control the test performance, particularly in the laboratory procedures. Standard vancomycin powder should provide the following MIC values:

**Microorganism** | **MIC (mcg/mL)**
---|---
*S. aureus* | 0.25 to 2
*S. epidermidis* | 0.5 to 2
*S. faecalis* | 2 to 16
*S. faecium* | 1 to 4

Interpretive criteria applicable only to tests performed by broth microdilution method using cation-adjusted Mueller-Hinton broth diluted 2 to 5% lysed horse blood.

### Diffusion Techniques

Quantitative methods that require measurement of zone diameters also provide reproducible results with less experienced personnel and less equipment. One such standardized procedure requires the use of standardized inoculum concentrations. This procedure uses paper disks impregnated with 30 mcg vancomycin to test the susceptibility of microorganisms to vancomycin. Reports from the laboratory providing results of the standard single-disk susceptibility test with a 30 mcg vancomycin disk should be interpreted according to the following criteria: For testing aerobic microorganisms other than enterococci:

<table>
<thead>
<tr>
<th>Zone Diameter (mm)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤15</td>
<td>Susceptible (S)</td>
</tr>
<tr>
<td>Intermediate (I)</td>
<td></td>
</tr>
<tr>
<td>≥16</td>
<td>Resistant (R)</td>
</tr>
</tbody>
</table>

For testing enterococci:

<table>
<thead>
<tr>
<th>Zone Diameter (mm)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤15</td>
<td>Susceptible (S)</td>
</tr>
<tr>
<td>Intermediate (I)</td>
<td></td>
</tr>
<tr>
<td>≥16</td>
<td>Resistant (R)</td>
</tr>
</tbody>
</table>

### Zone Size Interpretation for enterococci:

- A direct nitrocellulose-based 9-laminate test using direct colony growth should be performed to detect either ampicillin or vancomycin resistance among enterococci due to ß-lactamase production.
- When testing for enterococci resistance to vancomycin, colonies should be counted after 24 hours and examined using transmitted light. The presence of a haze indicates resistance in the case of vancomycin indicates resistance. Those enterococci with intermediate zone diameters are best measured by a standardized procedure based on a dilution method (broth or agar) or equivalent.

### For testing streptococci:

<table>
<thead>
<tr>
<th>Zone Diameter (mm)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤17</td>
<td>Susceptible (S)</td>
</tr>
<tr>
<td>Intermediate (I)</td>
<td></td>
</tr>
<tr>
<td>≥18</td>
<td>Resistant (R)</td>
</tr>
</tbody>
</table>

Indications and Usage:

To reduce the development of drug-resistant bacteria and maintain the effectiveness of vancomycin, the drug should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

Vancomycin hydrochloride for injection, USP, is indicated for the treatment of serious or severe infections caused by susceptible strains of *S. aureus* (including methicillin-resistant strains). It is indicated for penicillin-allergic patients, for patients who cannot receive or who have failed to respond to other drugs, including the penicillins or cephalosporins, and for infections caused by vancomycin-susceptible organisms but not resistant to other antimicrobial drugs. Vancomycin is indicated for initial therapy when methicillin-resistant staphylococci are suspected. Once susceptibility data are available, therapy should be adjusted accordingly.

Vancomycin is effective in the treatment of staphylococcal endocarditis. Its effectiveness has been documented in other infections due to staphylococci, e.g., bone infections, lower respiratory tract infections, and skin and skin structure infections. When staphylococcal infections are localized and purulent, antibiotics are used as adjuncts to appropriate surgical measures.

Vancomycin has been reported to be effective alone or in combination with an aminoglycoside for endocarditis caused by *S. viridans* or *S. bovis*. For endocarditis caused by enterococci (e.g., *S. faecalis*), vancomycin has been reported to be effective only in combination with an aminoglycoside.

Vancomycin has been reported to be effective for the treatment of diphtheroid endocarditis. Vancomycin has been used successfully in combination with either rifampin, an aminoglycoside, or both. Direct contact between the prosthetic valve endocarditis caused by *S. epidermidis* or diphtheroids. Specimens for bacteriologic cultures should be obtained in order to isolate and identify causative organisms and to determine their susceptibility to antibacterial agents.

The parenteral form of vancomycin may be administered orally for treatment of antibiotic-associated diarrhea caused by *C. difficile* and for staphylococcal enterocolitis. In the clinical use of vancomycin hydrochloride alone is of unproven benefit for these indications. Vancomycin is not effective by the oral route for other types of infections.

**CONTRADICTIONS:** Vancomycin is contraindicated in patients with known hypersensitivity to this antibiotic.

**WARRNINGS:** Rapid bolus administration (e.g., over several minutes) may be associated with exaggerated hypotension and cardiac arrest.

Vancomycin should be administered in a diluted solution over a period of not less than 60 minutes to prevent infusion-related reactions. Stopping the infusion usually results in a prompt cessation of these reactions.

Ototoxicity has been reported in patients receiving vancomycin. It may be transient or permanent. It has been reported mostly in patients who have been receiving other ototoxic drugs, who have an underlying hearing loss, or who are receiving concomitant therapy with another ototoxic and electrolyte management, protein supplementation, antibiotic treatment of *C. difficile*, and surgical evaluation should be instituted as clinically indicated.

**PRECAUTIONS:**

**General:** Prescribing vancomycin in the absence of a proven or strongly suspected bacterial infection or useful antimicrobial activity can yield the selection of drug-resistant bacteria and increase the risk of the development of drug-resistant bacteria. Clinically significant drug reactions have been reported in some patients being treated for active *C. difficile*-induced pseudomembranous colitis after multiple oral doses of vancomycin.

Prolonged use of vancomycin may result in the growth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken. In recent years, there have been reports of pseudo-membranous colitis with *C. difficile* infection in patients who received IV vancomycin.

In order to minimize the risk of nephrotoxicity with vancomycin, patients with underlying renal dysfunction or patients requiring treatment with an aminoglycoside, serial monitoring of renal function should be performed and particular care should be taken in following appropriate dosing schedules (see DOSAGE AND ADMINISTRATION).

Serial tests of auditory function may be helpful in order to minimize the risk of ototoxicity. Nonsteroidal anti-inflammatory agents have been reported to decrease the renal clearance of vancomycin and should be used with caution in patients requiring vancomycin therapy. Aminoglycosides such as gentamicin have been reported to increase the ototoxic potential of vancomycin.

Vancomycin is irritating to tissue and must be given by a secure IV route of administration. Pain, tenderness, and hemorrhage can follow intramuscular (IM) injection of vancomycin or with inadvertent extravasation. Thrombophlebitis may occur, the frequency of which can be minimized by administering the drug slowly as a dilute solution (2.5 to 9.0 mL/g) and rotating the sites of infusion.

There have been reports that the frequency of infusion-related events (e.g., flushing, rash, urticaria, angioedema, and pruritus) increases with the concomitant administration of other antimicrobial agents. Infusion-related events may be minimized by the administration of vancomycin as a 60-minute infusion prior to antimicrobial induction.

The safety and efficacy of vancomycin administration by the intraperitoneal and intravenous routes have not been assessed.

Although the safety and efficacy of vancomycin administration by the intraperitoneal route have not been established, reports reveal that the product has been given by this route during peritoneal dialysis. Administration of the intraperitoneal route during continuous ambulatory peritoneal dialysis has resulted in over 50 reports of bacterial peritonitis in some patients within the 12-hour period after administration. To date, all have been self-limited and ranged from cloudy dialysate alone to severe abdominal pain and fever. Most cloudy dialysates were sterile and some contained increased numbers of white blood cells and polymorphonuclear cells. Fluids usually cleared promptly after discontinuation of the vancomycin.

**Information for Patients:**

Diarrhea is a common problem caused by many drugs. It usually begins 1 to 2 days after starting treatment and shortly after the antibiotic is discontinued. Sometimes after stopping treatment with antibiotics, patients can develop watery and bloody stools (with or without cramping and fever), even as late as 2 to 4 weeks after having taken the last dose of antibiotic. If this occurs, patients should contact their physician as soon as possible.

Patients should be counseled that antibiotic treatment for bacterial infections may alter the normal flora in the colon, and may permit overgrowth of nonsusceptible bacteria. The patient should be advised to report any exacerbation of persistent diarrhea after discontinuation of the antimicrobial drugs including vancomycin.

If *C. difficile* infection (CDAD) is suspected (the usual symptoms are diarrhea, which may range in severity from mild to severe, accompanied by *watery* and *bloody* stools), *C. difficile* must be considered in all patients who present with diarrhea following antibiotic use. Careful medical history and physical examination will usually reveal the presence of *C. difficile* in patients with drug-induced diarrhea. If *C. difficile* infection is confirmed, treatment with a quinolone drug such as ciprofloxacin is recommended. Vancomycin should be used only if appropriate therapy with a quinolone drug is not possible.
Concomitant administration of vancomycin and anesthetic agents has been associated with erythema and histamine-like flushing (see PHARMACOLOGY). Concurrent and/or sequential systemic or topical use of other potentially, neurotoxic and/or nephrotoxic drugs, such as amphotericin B, aminoglycosides, bacitracin, polymyxin B, colistin, or cisplatin, when indicated requires careful monitoring.

**Carcinogenesis, Mutagenesis, Impairment of Fertility**

Although no long-term studies in animals have been performed to evaluate carcinogenic potential, no mutagenic potential of vancomycin has been assessed in standard laboratory tests. No definitive fertility studies have been performed.

**Pregnancy**

Teratogenic Effects: Pregnancy Category C

In a controlled clinical study, vancomycin was administered to pregnant women for serious staphylococcal infections that were complicated by their IV drug abuse to potentiate potential, ototoxic and/or nephrotoxic effects on the infant. Vancomycin was found in cord blood. No sensorineural hearing loss or nephrotoxicity attributable to vancomycin was noted. One infant experienced conductive hearing loss that was not attributed to the administration of vancomycin. Because the number of patients treated in this study is limited, vancomycin was administered only in the second and third trimesters, it is not known whether vancomycin causes fetal harm.

**Nursing Mothers**

Vancomycin is secreted in human milk. Caution should be exercised when vancomycin is administered to a nursing woman. In a nursing woman, 50% of the potential for adverse events, a decision should be made whether to discontinue nursing or discontinue the drug, taking into account the importance of the drug to the mother.

**Pediatric Use**

In premature neonates and young infants, it may be inappropriate to confirm desired vancomycin serum concentrations. Concomitant administration of vancomycin and anesthetic agents is often associated with erythema and histamine-like flushing in pediatric patients (see ADVERSE REACTIONS).

**Geriatrics**

The natural decrement of glomerular filtration with increasing age may lead to elevated vancomycin serum concentrations if dosage is not adjusted. Vancomycin dosage schedules should be adjusted in elderly patients (see DOSAGE AND ADMINISTRATION).

**ADVERSE REACTIONS**

Following are adverse events reported following intravenous administration of vancomycin (see PRECAUTIONS).

**Skin and Subcutaneous Tissue Disorders**

Drug Rash with Eosinophilia and Systemic Symptoms (DRESS)

**OVERDOSAGE**

Supportive measures, advised, with maintenance of glomerular filtration. Vancomycin is poorly removed by dialysis. Hemofiltration and hemoperfusion with charcoal have been reported to result in increased vancomycin clearance. The median lethal intravenous dose is 319 mg/kg in rabbits and 400 mg/kg in mice. To obtain up-to-date information about the treatment of overdosage, a certified Regional Poison Control Center, Telephone numbers of certified poison control centers are listed in the Physician’s Desk Reference (PDR). In managing overdosage, consider the possibility of multiple drug overdoses, interaction among drugs and unusual drug kinetics in your patient.

**DOSAGE AND ADMINISTRATION**

**Infusion-Related Events**

During or soon after rapid infusion of vancomycin, patients may develop anaphylactoid reactions, ranging from erythema and urticaria, to anaphylaxis. Infusion-related reactions and events may be avoided by administering the drug on a daily basis.

**Neutropenia**

The initial dose should be no less than 15 mg/kg, even in patients with decreased renal insufficiency. The table is not valid for functionally anephric patients. For such patients, an initial dose of 15 mg/kg of body weight should be given to achieve prompt therapeutic serum concentrations. The dose required to achieve serum concentrations is 1.9 mg/kg/24 hr. In patients with renal impairment, it may be more convenient to give maintenance doses of 250 to 1000 mg once every several days rather than administering the drug on a daily basis. In anuria, a dose of 1000 mg every 7 to 10 days has been recommended.

**Chemical peritonitis** has been reported. Serum creatinine is known, the following formula (based on sex, weight and age of the patient) may be used to calculate creatinine clearance. Calculated creatinine clearances (mL/min) are only estimates. The creatinine clearance should be measured promptly.

Men: \( 72 \times \text{weight (kg)} \times (140 - \text{age in years}) \)

Women: \( 0.85 \times \text{weight (kg)} \times (140 - \text{age in years}) \)

The serum creatinine must represent a steady state of renal function or the estimated value for creatinine clearance will not be valid. Such a calculated clearance is not an accurate estimate of actual clearance in patients with conditions: (1) characterized by decreasing renal function, such as shock, severe heart failure or oliguria; (2) in which a normal relationship between muscle mass and total body weight is not present, such as in obese patients or those with liver disease, edema, or ascites; and (3) accompanied by debilitation, malnutrition or infection.

**Compatibility with Other Drugs and IV Fluids**

The following dextrose and IV fluids are physically and chemically compatible (with 4 g/L vancomycin concentration).

**Preparation and Stability**

At the time of use, reconstitute vials of vancomycin with Sterile Water for Injection, USP to a concentration of 50 mg of vancomycin/mL. (See following table for volume of diluent.)

**DOSAGE AND ADMINISTRATION**

Infusion-related events are related to both the concentration and the rate of administration of vancomycin. Concentrations of no more than 5 mg/mL and rates of no more than 10 mg/min are recommended (see also age-specific recommendations). In selected patients in need of fluid restriction, a concentration up to 10 mg/mL may be used. Use of such high concentrations may increase the risk of infusion-related events. Infusion-related events may occur, however, at lower concentrations.

**Patients with Normal Renal Function**

**Adults**

The usual daily dose is 2 g divided either as 500 mg every 6 hours or 1 g every 8 hours. Each dose should be administered at no more than 10 mg/min, or over a period of at least 60 minutes, whichever is longer. Other factors, such as age or obesity, may call for modification of the usual intravenous daily dose.

**Children**

The usual intravenous dosage of vancomycin is 10 mg/kg per dose given every 6 hours. Each dose should be administered over a period of at least 60 minutes. Close monitoring of serum concentrations of vancomycin may be necessary in these patients.

**Patients with Impaired Renal Function**

**Early Elderly Patients**

Dosage adjustment must be made in patients with impaired renal function. In premature infants and the elderly, greater dosage reductions than expected may be necessary because of decreased renal function. Measurement of vancomycin serum concentrations can be helpful in optimizing therapy, especially in seriously ill patients with changing renal function. Vancomycin serum concentrations can be determined by use of microbiologic assay, radioimmunoassay, fluorescence polarization immunoassay, fluorescence immunosassay or high-pressure liquid chromatography.
CHRONICALLY EFFECTIVE (with 4 g/L vancomycin
hydrochloride):

- 5% Dextrose Injection, USP
- 5% Dextrose Injection and 0.9% Sodium
  Chloride Injection, USP
- Lactated Ringer’s Injection, USP
- 5% Dextrose and Lactated Ringer’s
  Injection

Normosol®-M and 5% Dextrose
0.9% Sodium Chloride Injection, USP
Isolyte® E

Good professional practice suggests that compounded admixtures should be adminis-
tered as soon after preparation as is feasible. Vancomycin solution has a low pH and may cause physical instability of other compounds.

Parenteral drug products should be visually inspected for particulate matter and discolor-

ation prior to administration, whenever solution and container permit.

**For Oral Administration**

Oral vancomycin is used in treating antibiotic-

associated pseudomembranous colitis caused by C. difficile and for staphylococcal enterocoli-
tis. Vancomycin is not effective by the oral route for other types of infections. The usual adult
total daily dosage is 500 mg to 2 g given in 3 or 4 divided doses for 7 to 10 days. The total daily
dose in children is 40 mg/kg of body weight in 3 or 4 divided doses for 7 to 10 days. The total daily
dosage should not exceed 2 g. The appropriate
dose may be diluted in 1 oz of water and given to
the patient to drink. Common flavoring syrups
may be added to the solution to improve the
taste for oral administration. The diluted solution
may be administered via a nasogastric tube.

**HOW SUPPLIED:**

<table>
<thead>
<tr>
<th>Product No.</th>
<th>NDC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22110</td>
<td>63323-221-10</td>
</tr>
</tbody>
</table>

Vancomycin Hydro-
chloride for Injection,
USP equivalent to
500 mg vancomycin
in a 10 mL flip-top
vial, in packages of 25.

<table>
<thead>
<tr>
<th>Product No.</th>
<th>NDC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>28420</td>
<td>63323-284-20</td>
</tr>
</tbody>
</table>

Vancomycin Hydro-
chloride for Injection,
USP equivalent to 1 g
vancomycin in a
20 mL flip-top vial,
in packages of 10.

Store at 20° to 25°C (68° to 77°F) [see USP
Controlled Room Temperature].

Vial stoppers do not contain natural rubber
latex.

**ANIMAL PHARMACOLOGY:**

In animal studies, hypotension and bradycardia
occurred in dogs receiving an intravenous infu-
sion of vancomycin, 25 mg/kg, at a concentra-
tion of 25 mg/mL and an infusion rate of
13.3 mL/min.

**REFERENCES:**

1. National Committee for Clinical Laboratory
   Standards. Methods for Dilution Antimicrobial
   Susceptibility Tests for Bacteria that Grow Aero-
   bically — Fourth Edition. Approved Standard
   NCCLS Document M7-A4, Vol. 17, No. 2,
2. National Committee for Clinical Laboratory
   Standards. Performance Standards for Antimi-
   Approved Standard NCCLS Document M2-A6,
   Vol. 17, No. 1, NCCLS, Wayne, PA, January,
   1997.
3. Moellering, R.C., Krogstad, D.J., and Green-
   blatt, D.J.: Vancomycin Therapy in Patients with
   Impaired Renal Function: A Nomogram for Dos-