METOCLOPRAMIDE (Systemic)

Category

Dopaminergic blocking agent; gastrointestinal emptying (delayed) adjunct; peristaltic stimulant; antiemetic.

Indications

Note: Bracketed information in the Indications section refers to uses that are not included in U.S. product labeling.

Accepted

Radiography, gastrointestinal, adjunct and

Intubation, intestinal¾Metoclopramide injection is indicated to facilitate intestinal intubation in adults and children, and to stimulate gastric emptying and intestinal transit of barium in cases where delayed emptying interferes with radiological examinations of stomach or small intestine. 1, 79

Gastroparesis (treatment) *¾Metoclopramide is indicated for the relief of symptoms of acute and recurrent diabetic gastroparesis. 1, 21, 22, 79

Nausea and vomiting, cancer chemotherapy-induced (prophylaxis) ¾Metoclopramide injection is indicated in high doses for the prevention of nausea and vomiting associated with emetogenic cancer chemotherapy. 1, 23, 24, 79

Some clinicians may prefer ondansetron to high-dose metoclopramide for prophylaxis of cancer chemotherapy-induced nausea and vomiting because ondansetron is less toxic, and in some studies, has been proven more effective than high-dose metoclopramide 64, 67, 68, 75.

Nausea and vomiting, postoperative (prophylaxis)¾Metoclopramide is indicated for the prophylaxis of postoperative nausea and vomiting in cases where nasogastric suction is undesirable. 1, 79

Reflux, gastroesophageal (treatment) *¾Oral metoclopramide is indicated in adults for the symptomatic short-term treatment of heartburn and reflux esophagitis due to delayed gastric emptying. 1, 25, 79 [In infants, it is used in the treatment of chronic vomiting and recurrent bronchopulmonary manifestations associated with gastroesophageal reflux.] 26, 27

[Nausea and vomiting, postoperative, drug-related (treatment)]¾Metoclopramide is used in the treatment of drug-related postoperative nausea and vomiting. 3, 80

[Gastric emptying, slow (treatment)] 28, 71 or

[Gastric stasis, in preterm infants (treatment)] 29¾Metoclopramide is used for correcting the slow gastric emptying in postvagotomy stasis, in idiopathic stasis, and in various collagen diseases such as

scleroderma. In addition, it is used for persistent functional feeding intolerance and gastric stasis in preterm infants. 55

[Pneumonitis, aspiration (prophylaxis)] *¾Metoclopramide is used prior to general anesthesia to promote gastric emptying and reduce the risk of aspiration, especially in emergency surgery, cesarean sections, or delivery. 4, 29, 46

[Headache, vascular (treatment adjunct)] *¾Metoclopramide is used to counteract the gastric stasis and nausea associated with migraine, and to promote the absorption of orally administered analgesics given in the treatment of migraine. 4, 30

[Hiccups, persistent (treatment)] *¾Metoclopramide is used in the control of persistent hiccups. 8, 9, 10, 11, 12, 58

[Metoclopramide has been used in the treatment of lactation deficiency; however, it has generally been replaced by more effective medications.] 13, 76

* Not included in Canadian product labeling.

Pharmacology

Mechanism of action/Effect:

Dopaminergic blocking agents¾Gastrointestinal emptying (delayed) adjunct; peristaltic stimulant: Exact mechanism of action is unknown; however, it is believed that metoclopramide inhibits gastric smooth muscle relaxation produced by dopamine, thus enhancing cholinergic responses of the gastrointestinal smooth muscle. Accelerates intestinal transit and gastric emptying by preventing relaxation of gastric body and increasing the phasic activity of antrum. At the same time, this action is accompanied by relaxation of the upper small intestine, resulting in an improved coordination between the body and antrum of the stomach and the upper small intestine. Decreases reflux into the esophagus by increasing the resting pressure of the lower esophageal sphincter and improves acid clearance from the esophagus by increasing amplitude of esophageal peristaltic contractions. 1

Antiemetic¾Dopamine antagonist action raises the threshold of activity in the chemoreceptor trigger zone and decreases the input from afferent visceral nerves. 1 High doses of metoclopramide have been found to antagonize 5-hydroxytryptamine (5-HT) receptors in the peripheral nervous system in animals. 61, 62

Other actions/effects:

Metoclopramide stimulates prolactin secretion and causes a transient increase in circulating aldosterone levels, which may be associated with transient fluid retention. 1

Precautions to Consider

Cross-sensitivity and/or related problems

Patients sensitive to procaine and procainamide may be sensitive to this medication also.

Mutagenicity/Tumorigenicity

An Ames mutagenicity test performed on metoclopramide was negative. 78, 79

Dopaminergic blocking medications produce an elevation in prolactin concentrations, which persists during long-term administration. Tissue culture experiments indicate that approximately one third of human breast cancers are prolactin-dependent in vitro , a factor of potential importance if the prescription of these medications is contemplated in a patient with a previously detected breast cancer. Although disturbances such as galactorrhea, amenorrhea, gynecomastia, and impotence have been reported, the clinical significance of elevated serum prolactin concentrations is unknown for most patients. An increase in mammary neoplasms has been found in rodents after long-term administration of dopaminergic blocking medications. However, neither clinical studies nor epidemiologic studies conducted to date have shown an association between long-term administration of these medications and mammary tumorigenesis; the available evidence is considered too limited to be conclusive at this time. 77, 78, 79, 80

Pregnancy/Reproduction

Fertility¾Studies in rats, mice, and rabbits at doses from 12 to 250 times the human dose have shown that metoclopramide does not impair fertility. 1

Pregnancy¾Extensive studies in humans have not been done.
Studies in animals have not shown that metoclopramide causes adverse effects in the fetus.
FDA Pregnancy Category B.

Breast-feeding

Problems in humans have not been documented; however, risk-benefit must be considered since metoclopramide is distributed into breast milk. 1

Pediatrics

Extrapyramidal effects, especially dystonic reactions, of metoclopramide are more likely to occur in children shortly after initiation of therapy, and usually with doses higher than 0.5 mg per kg of body weight (mg/kg) per day. 56, 57 Methemoglobinemia has been reported in premature and full-term neonates receiving metoclopramide intramuscularly at a dose of 1 to 2 mg/kg a day for 3 days or more. 1, 6

Geriatrics

Extrapyramidal effects, especially parkinsonism and tardive dyskinesia, of metoclopramide are more likely to occur in elderly patients following usual or high doses over a long period of time.

Drug interactions and/or related problems

The following drug interactions and/or related problems have been selected on the basis of their potential clinical significance (possible mechanism in parentheses where appropriate)¾not necessarily inclusive (>> = major clinical significance):

Note: Only specific interactions between metoclopramide and other oral medications have been identified in this monograph. However, because of increased gastrointestinal motility and decreased gastric emptying time caused by metoclopramide, absorption of oral medications from the stomach may be decreased, while absorption from the small intestine may be enhanced. 1, 59, 60, 76

Combinations containing any of the following medications, depending on the amount present, may also interact with this medication.

>> Alcohol

(concurrent use may increase the central nervous system [CNS] depressant effects of either alcohol or metoclopramide; concurrent use also may accelerate gastric emptying of alcohol, thus possibly increasing its rate and extent of absorption from the small intestine 1, 19, 20, 77, 78, 79, 80)

Anticholinergics or other medications with anticholinergic activity (see Appendix II) or 1, 29, 77, 78, 79, 80

Opioid-containing medications

(concurrent use may antagonize the effects of metoclopramide on gastrointestinal motility 1, 77, 78, 79, 80)

Apomorphine 1, 3

(prior administration of metoclopramide may decrease the emetic response to apomorphine; also, concurrent use may potentiate the CNS depressant effects of either apomorphine or metoclopramide)

Bromocriptine

(metoclopramide may increase serum prolactin concentrations and interfere with effects of bromocriptine; dosage adjustment of bromocriptine may be necessary 33, 49)

Cimetidine

(concurrent use may decrease the effect of cimetidine due to decreased absorption 71, 72, 73)

>> CNS depression-producing medications, other (see Appendix II)

(concurrent use may increase the sedative effects of either these medications or metoclopramide 1, 77, 78, 79, 80)

Cyclosporine

(the decrease in gastric emptying time caused by metoclopramide may increase the bioavailability of cyclosporine; monitoring of cyclosporine concentrations may be necessary 19, 20, 35, 36, 76, 77, 78, 79, 80)

Digoxin

(concurrent use may decrease absorption of digoxin from stomach; dosage adjustment of digoxin may be necessary 1, 19, 20, 53, 77, 78, 79, 80)

Extrapyramidal reaction-causing medications (see Appendix II)

(concurrent use with metoclopramide may increase the frequency and severity of extrapyramidal effects)

Hepatotoxic medications (see Appendix II)

(concurrent use with metoclopramide may increase the risk of hepatotoxicity 1)

Levodopa

(metoclopramide has been reported to decrease the effectiveness of levodopa with concurrent use 47, 73, 74, 77, 78, 79, 80)

Mexiletine

(concurrent use with metoclopramide may accelerate absorption of mexiletine 31, 32)

Monoamine oxidase (MAO) inhibitors, including furazolidine and procarbazine

(metoclopramide releases catecholamines in patients with essential hypertension and should be used cautiously in patients receiving MAO inhibitors 1, 29, 77, 78, 79, 80)

Pergolide

(dopamine antagonists such as metoclopramide may decrease the effectiveness of pergolide 34)

Succinylcholine

(metoclopramide has been reported to prolong succinylcholine block; dosage reduction of succinylcholine may be necessary with concurrent use 37, 38, 39)

Laboratory value alterations

The following have been selected on the basis of their potential clinical significance (possible effect in parentheses where appropriate)¾not necessarily inclusive (>> = major clinical significance):
With diagnostic test results

Gonadorelin test

(concurrent use with metoclopramide may blunt the response to gonadorelin by increasing serum prolactin concentrations)

Hepatic function test

(results may be altered 1)

With physiology/laboratory test values

Aldosterone and

Prolactin, serum

(concentrations may be increased 1)

Medical considerations/Contraindications

The medical considerations/contraindications included have been selected on the basis of their potential clinical significance (reasons given in parentheses where appropriate)¾ not necessarily inclusive (>> = major clinical significance).
Except under special circumstances, this medication should not be used when the following medical problems exist

>> Epilepsy

(severity and frequency of seizures or extrapyramidal effects may be increased 1, 79, 80)

>> Gastrointestinal hemorrhage, mechanical obstruction, or perforation

(stimulation of gastrointestinal motility may aggravate condition 1, 79, 80)

>> Pheochromocytoma

(may cause hypertensive crisis 1, 78, 79, 80)

Risk-benefit should be considered when the following medical problems exist

Asthma

(administration of metoclopramide may increase risk of bronchospasm 1, 44)

Depression, mental

(condition may be exacerbated 78, 79)

Hypertension

(administration of intravenous metoclopramide may worsen condition due to release of catecholamines 1, 40, 79, 80)

Parkinson's disease

(symptoms may be exacerbated 47, 79)

>> Renal failure, severe, chronic

(risk of extrapyramidal effects may be increased; reduced dosage is recommended 41, 78, 79)

Sensitivity to metoclopramide, procaine, or procainamide 1

Side/Adverse Effects

Note: Methemoglobinemia has been reported in premature and full-term neonates receiving metoclopramide at a dose of 1 to 4 mg per kg of body weight (mg/kg) a day for 1 to 3 days or more. 1, 6, 79, 80

The following side/adverse effects have been selected on the basis of their potential clinical significance (possible signs and symptoms in parentheses where appropriate)¾not necessarily inclusive:
Those indicating need for medical attention

Incidence rare

Agranulocytosis 13, 14, 15 (chills; fever; sore throat; general feeling of tiredness or weakness); cardiovascular effects, specifically hypotension 1, 3 (dizziness or fainting); hypertension 1, 3, 40, 51 (dizziness; severe or continuing headaches; increase in blood pressure); tachycardia 1, 3, 52 (fast or irregular heartbeat); extrapyramidal effects, dystonic 79, 80 (muscle spasms of face, neck, and back; tic-like or twitching movements; twisting movements of body; inability to move eyes; weakness of arms and legs); extrapyramidal effects, parkinsonian 1, 47, 48, 50 (difficulty in speaking or swallowing; loss of balance control; mask-like face; shuffling walk; stiffness of arms or legs; trembling and shaking of hands and fingers); tardive dyskinesia 1, 43, 79, 80 (lip smacking or puckering; puffing of cheeks; rapid or worm-like movements of tongue; uncontrolled chewing movements; uncontrolled movements of arms and legs)¾usually occurs after at least one year of continuous treatment and may persist after discontinuation of metoclopramide

Note: Extrapyramidal effects may occur at therapeutic doses in any age group. However, they occur more frequently in children and young adults, and at the higher doses used in prophylaxis of vomiting due to cancer chemotherapy. 1 Dystonic reactions may start within minutes after start of intravenous therapy 18 and disappear within 24 hours after discontinuation of metoclopramide. Onset of parkinsonian symptoms may vary from a few weeks to several months after initiation of therapy; symptoms are reversible upon discontinuation of metoclopramide.

With high doses 18

Agitation (unusual nervousness, restlessness, or irritability); panic-like sensation; restless legs syndrome (aching or discomfort in lower legs or sensation of crawling in legs)

Note: These effects may occur within minutes of receiving high doses of metoclopramide and may last for 2 to 24 hours. 18

Those indicating need for medical attention only if they continue or are bothersome

Incidence more frequent

Diarrhea¾with high doses 1, 67, 69; drowsiness 1, 80; restlessness 1; unusual tiredness or weakness 1, 80

Incidence less frequent or rare

Breast tenderness and swelling 1; changes in menstruation 1, 80; constipation 1; dizziness 1; headache 1; insomnia (trouble in sleeping 1); mental depression 1, 78, 79; prolactin stimulation 1, 80 (increased flow of breast milk); nausea 1; skin rash 1; unusual dryness of mouth 1; unusual irritability 1

Overdose

For specific information on the agents used in the management of metoclopramide overdose, see:

- Diphenhydramine in Antihistamines (Systemic) monograph; and/or
- Methylene Blue (Systemic) monograph.

For more information on the management of overdose or unintentional ingestion, contact a Poison Control Center (see Poison Control Center Listing).

Clinical effects of overdose

Symptoms are self-limiting and usually disappear within 24 hours. 79, 80

The following have been selected on the basis of their potential clinical significance (possible signs and symptoms in parentheses where appropriate)¾not necessarily inclusive:

Confusion 1, 79, 80; drowsiness, severe 1, 79, 80; extrapyramidal effects, severe 79, 80; seizures 79, 80

Treatment of overdose

To decrease absorption¾

Dialysis is not likely to be an effective method of drug removal in overdose situations; hemodialysis and continuous ambulatory peritoneal dialysis do not remove significant amounts of metoclopramide. 79, 80

Specific treatment¾

Anticholinergic or antiparkinson drugs or antihistamines with anticholinergic properties 1 (50 mg of diphenhydramine administered intramuscularly in adults and 1 mg per kg of body weight [mg/kg] intramuscularly or intravenously in infants and children 63, 65, 66) to help in controlling the extrapyramidal reactions.

Methylene blue (1 to 2 mg/kg of a 1% solution injected intravenously over a 5-minute period) 17 is used to reverse methemoglobinemia resulting from metoclopramide administration in premature and full-term infants. 1, 6

Supportive care¾

Patients in whom intentional overdose is confirmed or suspected should be referred for psychiatric consultation.

Patient Consultation

As an aid to patient consultation, refer to Advice for the Patient, Metoclopramide (Systemic) .
In providing consultation, consider emphasizing the following selected information (>> = major clinical significance):
Before using this medication

>> Conditions affecting use, especially:

Sensitivity to metoclopramide, procaine, or procainamide
Breast-feeding¾Distributed into breast milk
Use in children¾Extrapyramidal effects more likely; increased risk of methemoglobinemia in premature and full-term infants
Use in the elderly¾Extrapyramidal effects more likely
Other medications, especially alcohol and CNS depressants
Other medical problems, especially epilepsy; gastrointestinal bleeding, mechanical obstruction, or perforation; pheochromocytoma; or severe renal function impairment
Proper use of this medication

>> Taking 30 minutes before meals and at bedtime (for oral dosage forms)

>> Not taking more medication than the amount prescribed

>> Proper administration of metoclopramide oral solution (concentrate): Mix with liquid or semi-solid food, such as water, juices, soda or soda-like beverages, applesauce, and puddings

>> Proper dosing
Missed dose: Using as soon as possible; not using if almost time for next dose
>> Proper storage
Precautions while using this medication

>> Avoiding use of alcohol or other CNS depressants

>> Caution if drowsiness occurs

Side/adverse effects

Signs of potential side effects, especially agranulocytosis, cardiovascular effects, extrapyramidal effects, and tardive dyskinesia

General Dosing Information

In patients with severe renal function impairment (i.e., creatinine clearance < 40 mL per minute), the normally prescribed dose should be reduced by 50%, since adverse effects are more likely to be exacerbated. 1, 42

For parenteral dosage forms only

Intravenous injections of metoclopramide should be made slowly over a 1- to 2-minute period, since a transient but intense feeling of anxiety and restlessness followed by drowsiness may occur with rapid administration. 1

Intravenous infusion should be made slowly over a period of not less than 15 minutes. Metoclopramide injection may be diluted for intravenous infusion with 50 mL of 5% dextrose in water, sodium chloride injection, 5% dextrose in 0.45% sodium chloride, Ringer's injection, or lactated Ringer's injection. 1

For treatment of adverse effects and/or overdose

Recommended treatment for metoclopramide's adverse effects and/or overdose includes:

· Anticholinergic or antiparkinson drugs or antihistamines with anticholinergic properties 1 (50 mg of diphenhydramine administered intramuscularly in adults and 1 mg per kg of body weight [mg/kg] intramuscularly or intravenously in infants and children 63, 65, 66) to help in controlling the extrapyramidal reactions.

· Methylene blue (1 to 2 mg/kg of a 1% solution injected intravenously over a 5-minute period) 17 is used to reverse methemoglobinemia resulting from metoclopramide administration in premature and full-term infants. 1, 6

Oral Dosage Forms

Note: Bracketed uses in the Dosage Forms section refer to categories of use and/or indications that are not included in U.S. product labeling.

The dosing and strengths of the dosage forms available are expressed in terms of metoclopramide base.

METOCLOPRAMIDE ORAL SOLUTION USP

Usual adult and adolescent dose

Treatment of diabetic gastroparesis *¾

Oral, 10 mg (base) thirty minutes before symptoms are likely to occur or before each meal and at bedtime, up to four times a day.

Note: In the initial treatment of diabetic gastroparesis, the parenteral route of administration is recommended if severe symptoms are present. Therapy may begin at 10 mg (base) administered intramuscularly or intravenously three or four times a day, the dose adjusted as needed.

Treatment of gastroesophageal reflux *¾

Oral, 10 to 15 mg (base) thirty minutes before symptoms are likely to occur or before each meal and at bedtime, up to four times a day.

Note: Intermittent symptoms may be treated by taking 20 mg of metoclopramide prior to the provoking situation.

[Treatment of hiccups] *¾

Oral, 10 to 20 mg (base) four times a day for seven days. 8, 9 An initial dose of 10 mg intramuscularly may be given if necessary. 8, 9

Note: In patients with renal function impairment whose creatinine clearance is less than 40 mL per minute, initial dosage should be reduced by approximately one half 79, 81.

Usual adult and adolescent prescribing limits

500 mcg (0.5 mg) per kg of body weight per day.

Usual pediatric dose

Gastrointestinal emptying (delayed) adjunct or
Peristaltic stimulant¾
Oral, 0.1 to 0.2 mg per kg of body weight per dose, given thirty minutes before meals and at bedtime. 63

Strength(s) usually available

U.S.¾5 mg (base) per 5 mL (Rx)[Reglan] [Generic]

Canada¾5 mg (base) per 5 mL (Rx)[Maxeran] [Reglan]

Packaging and storage:

Store between 20 and 25 °C (68 and 77 °F), in a tight container, unless otherwise specified by manufacturer. Protect from light. Protect from freezing.

Auxiliary labeling:

· May cause drowsiness.
· Avoid alcoholic beverages.

METOCLOPRAMIDE HYDROCHLORIDE ORAL SOLUTION (CONCENTRATE)

Usual adult and adolescent dose

See Metoclopramide Oral Solution USP .

Usual adult and adolescent prescribing limits

See Metoclopramide Oral Solution USP .

Usual pediatric dose

See Metoclopramide Oral Solution USP .

Strength(s) usually available

U.S.¾10 mg (base) per 1 mL (Rx)[Metoclopramide Intensol (calibrated dropper enclosed) (sodium benzoate) (sorbitol)]

Canada¾Not commercially available.

Packaging and storage:

Store between 15 and 30 °C (59 and 86 °F), in a tight container, unless otherwise specified by manufacturer. Protect from light. 81 Protect from freezing.

Preparation of dosage form:

Each dose should be mixed with liquid or semi-solid food such as water, juices, soda or soda-like beverages, applesauce, or puddings 81.

Auxiliary labeling:

· Dilute before use.
· May cause drowsiness.
· Avoid alcoholic beverages.

METOCLOPRAMIDE TABLETS USP

Usual adult and adolescent dose

See Metoclopramide Oral Solution USP .

Usual adult and adolescent prescribing limits

See Metoclopramide Oral Solution USP .

Usual pediatric dose

See Metoclopramide Oral Solution USP .

Usual geriatric dose

See Metoclopramide Oral Solution USP .

Strength(s) usually available

U.S.¾5 mg (Rx)[Reglan (scored)] [Generic]

10 mg (Rx)[Octamide] [Reglan (scored)] [Generic]

Canada¾5 mg (Rx)[Apo-Metoclop] [Maxeran] [PMS-Metoclopramide] [Reglan]

10 mg (Rx)[Apo-Metoclop] [Maxeran (scored)] [PMS-Metoclopramide] [Reglan]

Packaging and storage:

Store between 20 and 25 °C (68 and 77 °F), unless otherwise specified by manufacturer. Store in a tight, light-resistant container.

Auxiliary labeling:

· May cause drowsiness.
· Avoid alcoholic beverages.

Parenteral Dosage Forms

Note: Bracketed uses in the Dosage Forms section refer to categories of use and/or indications that are not included in U.S. product labeling.

METOCLOPRAMIDE INJECTION USP

Usual adult and adolescent dose

Gastrointestinal emptying (delayed) adjunct 1 or
Peristaltic stimulant¾
Intravenous, 10 mg as a single dose. 1

[Treatment of hiccups] *¾
Intramuscular, 10 mg initially, followed by oral metoclopramide at a dose of 10 to 20 mg four times a day for seven days. 8, 9

Antiemetic: For prevention of cancer chemotherapy-induced emesis¾
Intravenous infusion, 2 mg per kg of body weight, administered thirty minutes before cisplatin or other highly emetogenic chemotherapeutic agent; may be repeated as needed every two or three hours. 1

Note: For prevention of emesis induced by chemotherapeutic agents with low emetic potential¾Intravenous infusion, 1 mg per kg of body weight. 1

Continuous intravenous infusion, 3 mg per kg of body weight before chemotherapy, followed by 0.5 mg per kg of body weight per hour for eight hours. 62, 64

Antiemetic: For prevention of postoperative emesis¾
Intramuscular, 10 to 20 mg near the end of surgery. 1

Usual pediatric dose

Antiemetic¾For prevention of cancer chemotherapy-induced emesis 66 or
Gastrointestinal emptying (delayed) adjunct or
Peristaltic stimulant¾
Intravenous, 1 mg per kg of body weight as a single dose. May be repeated one time after sixty minutes. 65

Note: To reduce the chance of increased adverse reactions, dosages should not exceed 2 mg per kg of body weight. Some clinicians recommend concurrent therapy with diphenhydramine at an intravenous dose of 1 mg per kg of body weight 15 minutes prior to metoclopramide infusion to limit side effects that may occur with doses of less than 2 mg per kg of body weight. 63, 65, 66

Strength(s) usually available

U.S.¾5 mg per mL (Rx)[Reglan] [Generic]

Canada¾5 mg per mL (Rx)[Reglan]

Packaging and storage:

Store between 15 and 30 °C (59 and 86 °F), unless otherwise specified by manufacturer. Protect from light (if injection does not contain an antioxidant).

Preparation of dosage form:

Doses of Metoclopramide Injection USP in excess of 10 mg may be mixed with 50 mL of 0.9% sodium chloride injection, 5% dextrose injection, 5% dextrose in 0.45% sodium chloride injection, Ringer's injection, or lactated Ringer's injection. 1

Stability:

Unused portion should be discarded. 79

Dilutions of metoclopramide injection may be stored for up to 48 hours after preparation if protected from light, or 24 hours if not protected from light. 79

Dilutions of metoclopramide and 0.9% sodium chloride may be stored frozen for up to 4 weeks after preparation. 79

Incompatibilities:

Metoclopramide injection is incompatible with calcium gluconate, cephalothin sodium 79 , chloramphenicol sodium 79 , cisplatin, erythromycin lactobionate, furosemide, methotrexate, penicillin G potassium, and sodium bicarbonate 79.

1, 70

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