

METOCLOPRAMIDE INJECTION BP

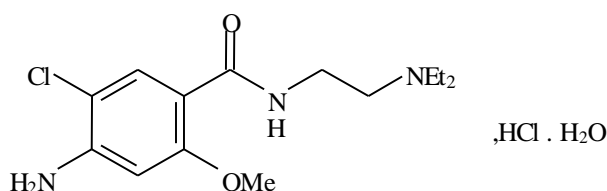
Name of the medicine

Metoclopramide hydrochloride BP.

Description

Metoclopramide hydrochloride is 4-amino-5-chloro-*N*-(2-diethylaminoethyl)-2-methoxybenzamide hydrochloride monohydrate. It occurs as a white or almost white, crystalline powder or crystals, very soluble in water, freely soluble in alcohol, sparingly soluble in methylene chloride, practically insoluble in ether.

The structural formula is represented below.



Molecular Formula: C₁₄H₂₂ClN₃O₂.HCl.H₂O

Molecular Weight: 354.3

CAS Number: 54143-57-6

Metoclopramide Injection BP is a clear, colourless, sterile, preservative-free solution containing metoclopramide hydrochloride anhydrous (as Metoclopramide Hydrochloride BP) 10mg in 2mL and Sodium Chloride BP in Water for Injections. When necessary, pH is adjusted with sodium hydroxide and/or hydrochloric acid.

Pharmacology

Class of drug: Antiemetic.

Mode of action: Metoclopramide has antiemetic, antinauseant and gastrokinetic activity. It stimulates motility of the upper gastrointestinal tract without stimulating gastric, biliary or pancreatic secretions. The rate of gastric emptying is increased due to increased peristalsis of the jejunum and duodenum. The tone and amplitude of gastric contractions are increased, with relaxation of the pyloric sphincter and duodenal bulb. These effects combine to result in decreased intestinal transit time. The effect of metoclopramide on motility is not dependent on intact vagal innervation, but it can be abolished by anticholinergic drugs. Metoclopramide has little, if any, effect on the motility of the colon or bladder. Metoclopramide also exhibits dopamine antagonist activity and consequently produces sedation and, rarely, other extrapyramidal reactions. It may have serotonin receptor (5HT₃) antagonist properties. Metoclopramide inhibits the central and peripheral effects of apomorphine, induces release of prolactin and produces a transient increase in circulating aldosterone levels.

Pharmacokinetics: Following intravenous administration, the onset of action is within one to three minutes and after intramuscular administration, this interval is extended to 10-15 minutes. The effect usually lasts from 1-2 hours.

About 80% of the drug is excreted in the urine in the first 24 hours after administration. Approximately half is unchanged metoclopramide and half is the glucuronide and sulphate conjugate. Metabolism mainly occurs in the liver and elimination half life may vary from 2.5 to 6 hours. Impaired renal function results in a reduced clearance and an increased half life, up to 15 hours. Plasma protein binding is 13-22%.

Indications

Adults (20 years or older)

- relief of nausea and vomiting associated with migraine, cancer therapy (chemotherapy or radiation), malignant disease, labour, infectious disease and uraemia
- control of post operative vomiting

- assist in small bowel intubation

Metoclopramide is of little benefit for the prevention or treatment of motion sickness.

Young adults and children

Metoclopramide should be restricted to the following conditions when used to treat children and young adults under 20 years of age because of the risk of adverse effects.

- severe intractable vomiting of known cause
- vomiting associated with radiation therapy or intolerance to cytotoxic drugs
- assist in small bowel intubation

Contraindications

- phaeochromocytoma due to the possibility of a hypertensive crisis, probably due to release of catecholamines from the tumour
- patients in whom increased gastrointestinal motility might be dangerous, e.g. presence of gastrointestinal haemorrhage, mechanical obstruction or perforation
- known hypersensitivity to metoclopramide. Note: patients sensitive to procaine and procainamide may be sensitive to metoclopramide.
- patients with porphyria
- metoclopramide should not be used in patients with epilepsy since it may increase the frequency and severity of seizures
- metoclopramide should not be administered to patients receiving other drugs which are likely to cause extrapyramidal reactions, since the frequency and severity of extrapyramidal reactions may be increased

Precautions

Persistent tardive dyskinesia - Tardive dyskinesia may appear in some patients on long-term therapy or may appear after drug therapy has been discontinued. The risk appears to be greater in elderly patients on high dose therapy, especially females. The symptoms are persistent and can often at times appear to be irreversible. The syndrome is characterised by rhythmical involuntary movement of the tongue, face, mouth or jaw (e.g. protrusion of tongue, puffing of cheeks, puckering of mouth, chewing movements). Sometimes these may be accompanied by involuntary movement of extremities. There is no known effective treatment for tardive dyskinesia; however, in some patients symptoms may lessen or resolve after metoclopramide treatment is stopped. Antiparkinson agents usually do not alleviate the symptoms of this syndrome.

Although the risk of tardive dyskinesia with metoclopramide has not been extensively studied, one published study reported a tardive dyskinesia prevalence of 20% among patients treated for at least 3 months. Both the risk of developing the syndrome and the likelihood that it will become irreversible are believed to increase with the duration of treatment and the total cumulative dose.

Metoclopramide therapy should routinely be discontinued in patients who develop signs or symptoms of tardive dyskinesia. It has been suggested that fine vermicular movements of the tongue may be an early sign of the syndrome, and, if the medication is stopped at that time, the syndrome may not develop. Tardive dyskinesia may remit partially or completely within several weeks to months after metoclopramide is withdrawn. Metoclopramide itself, however, may suppress (or partially suppress) the signs of tardive dyskinesia thereby masking the underlying disease process. The effect of this symptomatic suppression upon the long-term course of the syndrome is unknown. Therefore metoclopramide should not be used for the symptomatic control of tardive dyskinesia.

Prolonged treatment (greater than 12 weeks) with metoclopramide should be avoided in all but rare cases where the therapeutic benefit is thought to outweigh the risk to the patient of developing tardive dyskinesia.

Care should be exercised in patients being treated with other centrally active drugs.

Since extrapyramidal symptoms may occur with both metoclopramide and neuroleptics such as phenothiazines, care should be exercised in the event of both drugs being prescribed concurrently.

Metoclopramide Injection should be administered slowly over 1-2 minutes by intravenous injection to avoid a transient but intense feeling of anxiety and restlessness. Drowsiness may occur, so patients should be warned against engaging in activities requiring high levels of concentration.

Dystonic reactions occur in approximately 1% of patients given metoclopramide. These occur more often in children and young adults and may occur after a single dose.

Neuroleptic Malignant Syndrome has been reported when metoclopramide has been used alone, or in combination with neuroleptics (see **Adverse effects**).

Metoclopramide elevates prolactin levels. This may be of importance in patients with previously detected breast cancer, in which the breast cancer is prolactin dependent. Although prolactin elevating drugs have been associated with disturbances such as galactorrhoea, amenorrhoea, gynaecomastia and impotence, the clinical significance of elevated serum prolactin levels is not known for most patients. Chronic administration of prolactin stimulating neuroleptic drugs to rodents has shown an increase in mammary neoplasms. However, neither clinical or epidemiological studies have shown an association between chronic administration of these drugs and mammary tumorigenesis in humans and the available evidence is too limited to be conclusive at this time.

Patients with epilepsy may demonstrate an increased frequency or severity of seizures or extrapyramidal reactions if given metoclopramide.

Metoclopramide should be withheld for three to four days following gut surgery as vigorous muscular contractions may inhibit healing.

Metoclopramide induced depression has been reported in patients without a prior history of depression. Metoclopramide should be given to patients with a prior history of depression only if the expected benefits outweigh the potential risks.

The effects of metoclopramide may mask symptoms and delay the recognition of a serious disease. It should only be administered after a diagnosis has been established.

If vomiting persists in a patient being treated with metoclopramide, the patient's condition should be re-assessed to exclude the possibility of a more serious underlying disorder such as cerebral irritation.

Metoclopramide should be used with caution in patients with hypertension as intravenously administered metoclopramide has been shown to release catecholamines.

Patients receiving prolonged treatment with metoclopramide should be reviewed regularly.

Special care should be taken in cases of severe renal insufficiency (see **Dosage and administration**).

Metoclopramide can exacerbate parkinsonian symptoms; therefore it should be used with caution, if at all, in patients with parkinsonian syndrome (see **Adverse effects**).

Use in pregnancy: Category A. As there are no adequate or well controlled studies in pregnant women, metoclopramide should be used only if clearly needed. Animal tests in several mammalian species and clinical experience have not indicated any teratogenic effect. However, metoclopramide is not recommended during the first three months of pregnancy unless there are compelling reasons to do so.

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Use in lactation: As metoclopramide is excreted in human breast milk, its use is not recommended in nursing mothers unless the expected benefit outweighs the potential risk. The increased risk of adverse reactions in children should be considered when making a risk-benefit assessment.

Use in children: Metoclopramide should not be given to children unless a clear indication has been established for its use. Children are at a greater risk of experiencing adverse reactions to metoclopramide.

Interactions with other drugs

Anticholinergic drugs and narcotic analgesics may antagonise the effects of metoclopramide on gastrointestinal motility.

Alcohol, sedatives, hypnotics, narcotics and tranquilisers have additive sedative effects when administered in conjunction with metoclopramide.

Metoclopramide may cause extrapyramidal symptoms in some patients. Therefore, when metoclopramide is used concomitantly with other drugs that are likely to cause extrapyramidal reactions (e.g. neuroleptics such as phenothiazines), caution should be exercised.

Due to its effects on gastric motility, metoclopramide may affect the rate of absorption of drugs from the gastrointestinal tract. Absorption of drugs such as paracetamol, aspirin in patients with migraine, cyclosporin, diazepam, dopamine, levodopa and morphine controlled release tablets which are mainly absorbed from the small bowel, may be accelerated. Absorption of drugs such as digoxin, bromocriptine, cimetidine, penicillin and quinidine which are mainly absorbed from the stomach may be decreased.

The decrease in gastric emptying time caused by metoclopramide may increase the bioavailability of cyclosporin. Monitoring of cyclosporin concentrations may be necessary.

When metoclopramide is given concurrently with suxamethonium the recovery time is prolonged.

Since metoclopramide influences the delivery of food to the intestine and thus the rate of its absorption, the administration of metoclopramide may result in poor diabetic control in some patients. Therefore adjustment in, or timing of, insulin dosage may be necessary in insulin-controlled diabetics.

The finding that metoclopramide releases catecholamines in patients with essential hypertension suggests that it should be used cautiously, if at all, in patients receiving monoamine oxidase inhibitors.

Effect on laboratory tests: Metoclopramide may blunt the response to the gonadorelin diagnostic test, by increasing serum prolactin levels. Metoclopramide may alter hepatic function test results.

Adverse effects

Neurological: Adverse reactions to metoclopramide that are most frequently seen are restlessness, drowsiness, fatigue and lassitude, which occur in approximately 10% of patients. Insomnia, headache, dizziness have been reported less frequently. Acute depression has been reported rarely (less than 1 in 1,000 cases). Anxiety or agitation may occur, especially after rapid injection. Delirium, severe dysphoria, obsessive rumination and mania have been reported occasionally.

Parkinsonian symptoms, including tremor, rigidity, bradykinesia and akinesia, occur rarely in patients receiving metoclopramide but may be associated with usual or excessive doses or with decreased renal function.

Various extrapyramidal reactions to metoclopramide, usually of the dystonic type, have been reported. Acute dystonic reactions occur in approximately 0.2% of patients treated with 30 to 40 mg of metoclopramide per day. In cancer chemotherapy patients receiving 1 to 2 mg/kg per dose, the incidence is 2% in patients over the ages of 30 to 35, and 25% or higher in children and young adults who have not had prophylactic administration of diphenhydramine. Reactions include spasm of the facial muscles, trismus, rhythmic protrusion of the tongue, a bulbar type of speech, spasm of the extraocular muscles including oculogyric crisis, unnatural positioning of the head and shoulders and opisthotonos. There may be a generalised increase in muscle tone. The majority of reactions occur within 36 hours of starting treatment and the effects usually disappear within 24 hours of withdrawal of the drug. However, close observation is required and in cases of more severe reactions an antiparkinson drug such as benztropine or an anticholinergic antihistamine such as diphenhydramine should be given.

A fatal acute dystonic reaction has been reported in a patient who received hexamethylmelamine, cisplatin and metoclopramide high dose. Dystonic reactions may present rarely as upper airway obstruction with stridor and

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dyspnoea, possibly secondary to laryngospasm or supraglottic dystonia. A fatal cardiorespiratory arrest occurred in at least one patient with an acute dystonic reaction.

Tardive dyskinesia, which may be persistent, has been reported particularly in elderly patients (particularly women) following long term therapy with metoclopramide. Tardive dyskinesia is most frequently characterised by involuntary movements of the tongue, face, mouth or jaw, and sometimes by involuntary movements of the trunk and/or extremities. The risk of developing tardive dyskinesia and the likelihood that it will become irreversible are believed to increase with increasing duration of therapy and total cumulative dose. Although tardive dyskinesia can occur after relatively brief therapy with the drug at low doses, it appears to be more readily reversible under such circumstances (see **Precautions**).

Neuroleptic Malignant Syndrome: Neuroleptic Malignant Syndrome (NMS) has been reported very rarely (less than 2 in 10,000). NMS is potentially fatal and comprises hyperpyrexia, altered consciousness, muscle rigidity, autonomic instability and elevated levels of CPK, and must be treated urgently (recognised treatments include dantrolene and bromocriptine).

Metoclopramide should be stopped immediately if NMS occurs.

Gastrointestinal: Nausea or bowel disturbances have been reported.

Cardiovascular: A single case of supraventricular tachycardia following intramuscular administration has been reported. Cardiac conduction abnormalities (such as bradycardia and heart block) have occurred very rarely (less than 1 in 10,000) in association with intravenous metoclopramide. Atrial fibrillation, oedema, ventricular fibrillation, ventricular tachycardia, palpitations and tachycardia have also been associated with the use of metoclopramide. In one study in hypertensive patients, intravenously administered metoclopramide was shown to release catecholamines; hence, caution should be exercised when metoclopramide is used in patients with hypertension.

Endocrine: Raised serum prolactin levels have been observed during metoclopramide therapy; this effect is similar to that noted with many other compounds. Galactorrhoea and breast enlargement have also been observed during metoclopramide therapy.

Hypersensitivity: There have been isolated reports of hypersensitivity reactions (such as urticaria, maculopapular rash) in patients receiving the drug.

Respiratory: Respiratory failure, secondary to dystonic reaction, acute asthmatic symptoms of wheezing and dyspnoea may occur.

Genitourinary: Urinary incontinence, sexual dysfunction, priapism and muscle spasm may also occur.

Other effects: There have been isolated reports of blood disorders. Methaemoglobinaemia, particularly following overdose in neonates, has also occurred in patients receiving the drug. Agranulocytosis and hyperthermia have also been observed.

Dosage and administration

The dosage recommendations should be strictly adhered to in order to minimise the possibility of dystonic side effects. Metoclopramide should only be used after careful examination has excluded any underlying disorder (such as cerebral irritation) that may have induced the nausea and vomiting.

Total daily doses of metoclopramide should not normally exceed 0.5mg/kg bodyweight. This should be less (if possible) in children and young adults, when given by injection.

Usual dosage is as follows and should be administered by slow intravenous injection over 1 - 2 minutes or intramuscularly.

Adults (20 yrs or older): 10mg three times a day

Young adults (15 - 19 yrs): 5 - 10mg three times a day.

Treatment of young adults and children should commence at the lower dosage, where stated.

Children:

5 - 14 yrs: 2.5 - 5mg three times a day.

3 - 5 yrs: 2mg two to three times a day.

1 - 3 yrs: 1mg two to three times a day.

Under 1 year: 1 mg twice a day.

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For diagnostic purposes: A single dose of metoclopramide may be given 5 - 10 minutes prior to the examination.

Adults (20 yrs or older):	10 - 20mg
Young adults (15 – 19 yrs)	10mg
Children 9 - 14 yrs:	5mg
5 - 9 yrs:	2.5mg
3 - 5 yrs:	2mg
Under 3 yrs:	1mg

High dose therapy (Treatment of nausea and vomiting due to cytotoxic drug therapy): Metoclopramide used in high dose therapy may be given in doses up to 2mg/kg bodyweight diluted by intravenous infusion. The dose should be adjusted according to emetogenicity of the cytotoxic drug. The initial dose should be given prior to commencement with the cytotoxic drug and repeated two hourly up to a maximum of 10mg/kg in any 24 hour period. Infusion should be over 15 minutes in at least 50mL of suitable diluent.

Compatibility:

Intravenous fluids: No preservative is included in the formulation of Metoclopramide Injection BP. Therefore, to reduce microbiological hazard, admixture to intravenous fluids should be performed under aseptic conditions and the infusion commenced as soon as possible after preparation and in any case within 24 hours of preparation. If storage is necessary, keep at 2-8°C.

The literature indicates that Metoclopramide injection BP may be added to the following solutions:

- Glucose 5% in sodium chloride 0.45%
- Glucose 5% in water
- Mannitol 20%
- Sodium chloride 0.9%
- Ringer's injection
- Ringer's injection, lactated (Hartmann's solution)

Cytotoxic drugs:

The following compatibility information is indicated in the literature.

- Bleomycin sulfate: 3 units/mL with metoclopramide hydrochloride 5mg/mL visually compatible when injected sequentially into Y-site without flushing the Y-side arm between injections.
- Cisplatin: 1mg/mL with 5mg/mL metoclopramide hydrochloride visually compatible when injected sequentially into Y-site without flushing the Y-side arm between injections.
- Cyclophosphamide: 20mg/mL with metoclopramide hydrochloride 5mg/mL visually compatible when injected sequentially into Y-site without flushing the Y-side arm between injections.
- Fluorouracil: 50mg/mL with metoclopramide hydrochloride 5mg/mL visually compatible when injected sequentially into Y-site without flushing the Y-side arm between injections.
- Vinblastine sulfate: 1mg/mL with metoclopramide hydrochloride 5mg/mL visually compatible when injected sequentially into Y-site without flushing the Y-side arm between injections.

Narcotic analgesics:

- Morphine sulfate: 1mg/mL with metoclopramide hydrochloride 0.2mg/mL in glucose 5% in water visually compatible for a 4 hour study period at 25°C under fluorescent light.
- Pethidine hydrochloride: 10mg/mL with metoclopramide hydrochloride 0.2mg/mL in glucose 5% in water visually compatible for a 4 hour study period at 25°C under fluorescent light.

Use in patients with renal impairment: Since metoclopramide is excreted principally through the kidneys, in those patients whose creatinine clearance is below 40mL/min, therapy should be initiated at approximately one-half the usual dose. Subsequent dosage will depend on individual clinical response.

Use in patients with hepatic impairment: Metoclopramide undergoes hepatic metabolism via simple conjugation. Its safe use has been described in patients with advanced liver disease whose renal function was normal. It is suggested that therapy be initiated as half the recommended dose with subsequent dose adjustment being made as the individual response has been determined.

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Overdosage

Symptoms: Limited information is available on the acute toxicity of metoclopramide. Overdosage of metoclopramide may be expected to produce effects that are extensions of common adverse reactions: drowsiness, disorientation, and extrapyramidal reactions have been the principal effects reported. Other reported effects associated with metoclopramide overdosage have included feelings of anxiety or restlessness, headache, vertigo, nausea, vomiting, constipation, weakness, hypotension, and xerostomia; in addition generalized seizures and methaemoglobinaemia have occurred in infants. AV block has been observed very rarely.

Treatment: Treatment of metoclopramide overdose generally involves symptomatic and supportive care. There is no specific antidote for metoclopramide intoxication; however, agents with central anticholinergic activity (e.g. diphenhydramine, benztropine) may be useful in controlling extrapyramidal reactions. Symptoms of metoclopramide overdose are generally self-limiting and usually subside within 24 hours. Appropriate therapy should be instituted if hypotension or excessive sedation occurs. Methaemoglobinaemia should be treated with methylene blue. Haemodialysis or peritoneal dialysis is unlikely to enhance the elimination of metoclopramide.

Contact the Poisons Information Centre for advice on the management of an overdose.

Presentation and storage conditions

Metoclopramide Injection BP 10mg in 2mL (sterile) Steriluer[®] ampoule (10s)

Metoclopramide Injection BP 10mg in 2mL (sterile) Steriluer[®] ampoule (50s)

Store below 25°C. Protect from light.

The expiry date (month/year) is stated on the package after EXP.

Poison schedule of the medicine

Australia- S4.

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Name and Address

Pfizer New Zealand Ltd

PO Box 3998

Auckland

New Zealand

Toll Free Number: 0800736 363

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21 August 2009