Metronidazole is a drug used to treat infections caused by anaerobic bacteria and parasites (e.g. *Giardia lamblia* and *Trichomonas*).\(^1\)\(^2\) It exhibits antibiotic, amoebicidal and antiprotozoal effects.\(^3\) Metronidazole is effective in the treatment of oral infections (e.g. infections associated with tooth abscess and gingivitis) but only if the infection is caused by anaerobic bacteria. This drug is also used for the eradication of *Helicobacter pylori* in combination with other antibiotics.

### Precautions

The only absolute contraindication to the use of this drug is a hypersensitivity to Metronidazole.

Many cases of Metronidazole-induced encephalopathy have been reported.\(^4\)\(^5\) Metronidazole passes through the blood-brain barrier and therefore may lead to adverse effects on the central nervous system. Fortunately, these side effects occur rarely and disappear rapidly after Metronidazole cessation.

Metronidazole can cause peripheral neuropathy\(^6\)\(^7\) which is characterized by symptoms, such as:

- Numbness and tingling in the legs and arms
- Feeling cold or warm feet and hands
- Loss of coordination
- Increased sensitivity to touch

Peripheral neuropathy usually disappears shortly after the patient stops taking the drug, although one case has been reported that symptoms of peripheral neuropathy may persist two years after
Cases of acute pancreatitis caused by Metronidazole have been reported recently. If you're experiencing symptoms of an acute pancreatitis (e.g. abdominal pain that spreads to the lower back and get worse after eating, nausea and vomiting), you should contact your physician immediately.

Metronidazole can cause neutropenia, which is characterized by extreme reduction in the number of neutrophils - a type of white blood cells which play an important role in defending the body against infection. When neutrophil number is too low, your body cannot defend itself against microorganisms and because of that you'll be at increased risk of getting an infection. Consult your doctor if you're experiencing flu-like symptoms.

Metronidazole should not be used in patients suffering from epilepsy, because it can induce an epileptic attack.

It should never be used concurrently with alcoholic beverages because it can lead to the occurrence of disulfiram-like reaction.

### Metronidazole, pregnancy and breastfeeding

Two meta-analyzes have been conducted and none of them shown that Metronidazole increases the risk of birth defects or teratogenic effects. FDA classified this drug in the group B (drugs that haven't shown adverse effects on the fetus in animals, but there are not enough human studies). However, the Patient Information Leaflet states that Metronidazole should be used during pregnancy only if clearly needed.

Given that some researches conducted on animals linked this drug with an increased incidence of tumors, breastfeeding should be avoided while you're taking this drug.

### Dosage

Metronidazole exists in the form of intravenous injections, tablets and capsules.

#### Recommended dosage for Metronidazole tablets

The dosage depends on the severity of the infection and the body weight of the patient. The usual dose for treating anaerobic infections is 7.5 mg / kg four times a day. This means that the average adult male who weighs 80 kg should take 600 mg four times a day.

The usual dose for treating amebiasis is 750 mg every eight hours for 7-10 days.

The usual dose for treating infections caused by the parasite Trichomonas is 250 mg every eight hours for seven days.

### Interactions

Metronidazole enters into a major interactions with the following drugs / substances:

- Amprenavir (a drug used for treating HIV infection). Concomitant use of these two drugs
increases the risk of disulfiram-like reaction.

- **Anticoagulants** (*anisindione and warfarin*). Concomitant use of Metronidazole with these drugs increases the risk of bleeding.
- **Busulfan** - drug used for treating cancer. Co-administration of these two drugs increases the risk of side effects (*shortness of breath, fever, confusion, dizziness and others*).
- **Cholera vaccine, live.** Metronidazole can reduce the effectiveness of this vaccine.
- **Alcoholic beverages.** Concomitant administration of Metronidazole with alcoholic beverages can lead to the disulfiram-like reaction (*hot flushes, increased sweating, vomiting, headache, and tachycardia*).

## Side effects

Metronidazole usually causes mild and transient side effects, such as:

- Nausea
- Vomiting
- Taste changes
- Headache
- Drowsiness

Serious side effects rarely occur, but if they occur, you should contact your doctor immediately:

- Hallucinations and confusion
- Neutropenia (*weakened immune system*)
- Peripheral neuropathy (*numbness in the fingers, loss of coordination, etc.*).
- Acute pancreatitis (*characterized by abdominal pain*)
- Allergic reactions

## References

1. NCBI link 1
2. NCBI link 2
3. NCBI link 3
4. NCBI link 4
5. NCBI link 5
6. NCBI link 6
7. NCBI link 7
8. NCBI link 8
9. NCBI link 9
10. NCBI link 10
11. NCBI link 11
12. NCBI link 12