

## Package leaflet: Information for the patient

### Methotrexate 100 mg/ml solution for injection methotrexate

#### WARNINGS

The **dose must be adjusted carefully** depending on the body surface area if methotrexate is used for the treatment of **cancer**.

Fatal cases of intoxication have been reported after administration of **incorrectly calculated** doses.

Read all of this leaflet very carefully before this medicine is administered to you. If you have any further questions, please ask your doctor or pharmacist for advice.

#### **Read all of this leaflet carefully before this medicine is administered to you because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor or pharmacist.
- If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. See section 4.

#### **What is in this leaflet**

1. What Methotrexate 100 mg/ml is and what it is used for
2. What you need to know before receiving Methotrexate 100 mg/ml
3. How Methotrexate 100 mg/ml is administered
4. Possible side effects
5. How to store Methotrexate 100 mg/ml
6. Contents of the pack and further information

#### **1. What Methotrexate 100 mg/ml is and what it is used for**

Methotrexate is one of a group of medicines known as antimetabolites which affect cell growth, including the growth of cancer cells. It is used in the treatment of cancer and stops a substance called dihydrofolate reductase from working. This substance is an enzyme, which is important in cell growth (replication). By inhibiting the enzyme, cancer cells will eventually “die”.

Methotrexate is used alone or in combination with other medicines to treat certain types of cancer such as:

- leukaemia (acute lymphocytic leukaemias [ALL])
- breast cancer
- bone cancer (osteosarcoma)
- bladder cancer
- head and neck cancer
- gynaecological cancer (choriocarcinoma, trophoblastic disease - tumour development directly associated with pregnancy)
- cancer of the lymphatic system (Non-Hodgkin’s lymphoma, primary central nervous system lymphoma)

#### **2. What you need to know before receiving Methotrexate 100 mg/ml**

Before you start with your treatment with this medicine, you should talk to your doctor about possible benefits and risks of your therapy.

#### **You must not receive Methotrexate 100 mg/ml**

- if you are allergic to **methotrexate** or any of the other ingredients of this medicine (listed in section 6)

- if you have **severe problems with your kidneys** (renal insufficiency with creatinine clearance less than 60 ml/min)
- if you have **severe problems with your liver** (liver insufficiency), including alcoholic liver disease, abnormal blood tests, fibrosis, cirrhosis or recent active hepatitis
- if you suffer from **alcoholism**
- if you have any serious **blood disorders** (anaemia, a reduction in white cell number [leucopenia] or platelet number [thrombocytopenia])
- if you have a **bone marrow suppression**
- if you have a **severe active infection** (symptoms e.g. fever, chills)
- if you have a medical condition or are receiving medicines, which **lower your resistance to infection**
- if you are **breast-feeding (see section “Pregnancy, breast-feeding and fertility”)**
- if you have severe **ulcers** in your mouth, stomach or/and bowel
- if you suffer from **severe inflammation** of mouth, stomach or/and bowel

### Warnings and precautions

Talk to your doctor or pharmacist before you are given Methotrexate 100 mg/ml

- if you have impaired respiratory function
- if you have mild to moderate kidney or liver problems or a mild to moderate blood disorder
- if you have diarrhoea
- if you have ascites (collection of liquid in the free abdominal cavity) and/or pleural effusions (collection of liquid in the pleural cavity)
- if you are receiving or intend to receive any vaccine, as methotrexate can reduce their effect
- if you have had radio- or chemotherapy before (especially of the pelvis) or are receiving radiotherapy concurrently as soft tissue necrosis or bone necrosis and impaired bone marrow function (leading to reduced blood cell production) can occur
- if you have had radiotherapy of the brain as a leucoencephalopathy (inflammation of the brain) can occur
- if you have an impaired general condition (if you feel weak or infirm)
- if you are of advanced age
- if Methotrexate 100 mg/ml is given to very young children
- if you are dehydrated or suffer from conditions leading to dehydration (vomiting, diarrhoea, stomatitis)
- if you have inactive or chronic infections (e.g. shingles [herpes zoster], tuberculosis, hepatitis B or C) or are in contact with these infections
- if you have diabetes mellitus treated with insulin
- if you had skin problems after radiation therapy (radiation induced dermatitis) and sunburn. These conditions can reappear under methotrexate therapy (recall-reaction).
- if you have a fast-growing tumour as a tumour lysis syndrome (renal failure due to massive destruction of rapidly growing tumour cells) can occur
- if you produce black stool

Acute bleeding from the lungs in patients with underlying rheumatologic disease has been reported with methotrexate.

Psoriatic lesions can worsen during UV-irradiation and simultaneous administration of methotrexate.

If you, your partner or your caregiver notice new onset or worsening of neurological symptoms including general muscle weakness, disturbance of vision, changes in thinking, memory and orientation leading to confusion and personality changes contact your doctor immediately because these may be symptoms of a very rare, serious brain infection called progressive multifocal leukoencephalopathy (PML).

### Special precautionary measures for treatment with Methotrexate 100 mg/ml

Methotrexate temporarily affects sperm and egg production. Methotrexate can cause miscarriage and severe birth defects. You should avoid having a baby if you are being given methotrexate at the time and for at least 6 months after the end of your treatment with methotrexate if you are a woman. If you are a man you should avoid fathering a child if you are being given methotrexate at the time and for at least 3 months after the end of your treatment. See also section “Pregnancy, breast-feeding and fertility”.

Because of the possibility of fatal or severe intoxication during methotrexate therapy medium or high doses should only be used in patients with life-threatening tumour diseases. Rare cases of death have been reported after methotrexate tumour therapy.

Patients undergoing methotrexate therapy should be closely monitored to prevent intoxication and to ensure fast identifying of toxic side effects.

### Recommended examinations

Even if this medicine is administered at a low dose, severe side effects can occur. In order to diagnose them early, regular monitoring by the doctor at short-term intervals is necessary.

Before treatment is started your doctor may carry out the following examinations:

- blood tests such as blood cell counts of leucocytes, thrombocytes, erythrocytes
- kidney function tests such as creatinine
- blood tests to check liver function such as liver enzymes e.g. transaminases, hepatitis serology
- lung function tests, chest X-ray, tuberculosis test

During treatment your doctor may carry out the following examinations:

- blood tests such as blood cell counts of leucocytes, thrombocytes, erythrocytes, methotrexate serum level
- kidney function tests such as urine flow, pH value of the urine, blood (serum) tests such as creatinine, urea
- blood tests to check liver function such as liver enzymes e.g. transaminases, bilirubine
- chest X-ray
- liver biopsy
- check of mouth and throat for impairment of mucous membranes such as inflammation or ulceration

Do not miss appointments for these tests.

If the results of any of these tests are abnormal, treatment will only be resumed when all readings are back to normal.

### **Other medicines and Methotrexate 100 mg/ml**

Tell your doctor if you are taking, have recently taken or might take any other medicines.

Remember to tell your doctor about your treatment with Methotrexate 100 mg/ml, if you are prescribed another medicine while the treatment is still ongoing.

It is especially important to tell your doctor if you are using:

- non-steroidal anti-inflammatory drugs (NSAIDs; medicines against rheumatism, e.g. indomethacin, ibuprofen)
- painkillers such as salicylates (e.g. aspirin), amidopyrine derivatives, phenylbutazone and leflunomide
- diphenylhydantoin (e.g. phenytoin, used to treat seizures)
- barbiturates and tranquillisers (sedative agents)
- antibiotics (medicine against bacteria), e.g. tetracyclines, penicillins, chloramphenicol, cotrimoxazole, sulphonamides, trimethoprim, sulfamethoxazole
- cytostatics (medicine against cancer), e.g. doxorubicin, mercaptopurine, procarbazine, cisplatin, L-asparaginase, vincristine, cytarabine and 5-fluorouracil

- disease-modifying antirheumatic drugs (DMARD; medicines that are used to treat rheumatoid arthritis)
- probenecid (used to treat gout)
- p-aminobenzoic acid (used in sun creams)
- anti-folate medicines (e.g. nitrous oxide or co-trimoxazole)
- p-aminohippuric acid (substance to check kidney function)
- pyrimethamine (medicine against malaria)
- cholestyramine (lipid-lowering agent)
- acitretin or other retinoids (for psoriasis or skin disorders)
- theophylline (used to treat asthma)
- erythrocyte concentrates (for blood transfusion)
- nitrous oxide-based anaesthetics
- omeprazole (used to treat stomach ulcers)
- sulphasalazine (used to treat inflammation of the bowel)
- tetrahydrofolic acid preparations
- oral antidiabetics (medicines to treat diabetes)
- diuretics (increase urine output)
- hypoglycaemics (lower blood sugar levels)
- other medicines with nephrotoxic and hepatotoxic potential (incl. alcohol)
- vaccinations
- azathioprine (an immunosuppressive medicine)
- vitamin preparations containing folic acid or its derivatives
- prednisolone (anti-inflammatory medicine)

Please note that these statements may also apply to products used some time ago or at some time in the future.

### **Methotrexate 100 mg/ml with food, drink and alcohol**

During treatment with this medicine you should avoid any alcohol consumption as well as excessive consumption of coffee, caffeine-containing beverages or black tea. Also make sure you drink plenty of liquids during treatment with this medicine because dehydration (reduction in body water) can increase the toxicity of methotrexate.

### **Pregnancy, breast-feeding and fertility**

If you are pregnant or breast-feeding, think you may be pregnant or are planning to have a baby, ask your doctor or pharmacist for advice before taking this medicine.

#### Pregnancy

Do not use this medicine during pregnancy or if you are trying to become pregnant. Methotrexate can cause birth defects, harm the unborn child or cause miscarriage. It is associated with malformations of the skull, face, heart and blood vessels, brain and limbs. It is therefore very important that methotrexate is not given to pregnant women or to women who are planning to become pregnant unless oncology treatment is absolutely necessary. Therefore, in women of child-bearing age any possibility of pregnancy must be excluded with appropriate measures, e.g. a pregnancy test, before starting treatment.

Do not use Methotrexate 100 mg/ml if you are trying to become pregnant. You must avoid becoming pregnant during treatment with methotrexate and for at least 6 months after the end of treatment. Therefore, you must ensure that you are taking effective contraception for the whole of this period (see also section "Warnings and precautions").

If you become pregnant during treatment or suspect you might be pregnant, speak to your doctor as soon as possible. If you do become pregnant during treatment or if treatment during pregnancy is absolutely necessary, you should be offered advice regarding the risk of harmful effects on the child through treatment. If you want to become pregnant, you should speak with your doctor, who may refer you for specialist advice before the planned start of treatment.

### Breast-feeding

Do not breast-feed during treatment, because methotrexate passes into breast milk. If your attending doctor considers treatment with methotrexate as absolutely necessary during the lactation period, you must stop breast-feeding (please see section "You must not receive Methotrexate 100 mg/ml").

### Male fertility

The available evidence does not indicate an increased risk of malformations or miscarriage if the father takes methotrexate less than 30 mg/week. However, a risk cannot be completely excluded and there is no information regarding higher methotrexate doses. Methotrexate can have a genotoxic effect. This means that the medicine can cause genetic mutations. Methotrexate can affect the production of sperm, which is associated with the possibility of birth defects.

You should avoid fathering a child or to donate semen during treatment with methotrexate and for at least 3 months after the end of treatment. As treatment with methotrexate at higher doses commonly used in cancer treatment can cause infertility and genetic mutations, it may be advisable for male patients treated with methotrexate doses higher than 30 mg/week to consider sperm preservation before the beginning of treatment (see also section "Warnings and precautions").

### **Driving and using machines**

Tiredness and dizziness can occur during treatment with this medicine. If affected, you should not drive or operate machinery. If in any doubt, speak to your doctor before you drive or use machines.

### **Methotrexate 100 mg/ml contains sodium**

#### **10 ml vial**

This medicine contains 115.01 mg sodium (main component of cooking/table salt) in each 10 ml. This is equivalent to 5.75% of the recommended maximum daily dietary intake of sodium for an adult.

#### **50 ml vial**

This medicine contains 575.04 mg sodium (main component of cooking/table salt) in each 50 ml. This is equivalent to 28.75% of the recommended maximum daily dietary intake of sodium for an adult.

### **3. How Methotrexate 100 mg/ml solution for injection is administered**

This medicine should only be given by physicians who are familiar with the various characteristics of the medicines and its mode of action.

This medicine must not come into contact with your eyes and/or the surface of the skin or mucosa. In the event of contamination, the affected area must be rinsed immediately with ample amount of water.

#### **Dose**

Your doctor will decide on a suitable dose for you using current published therapy protocols for cancer treatment. Doses vary considerably and will depend on the underlying disease.

Your doctor may instruct you to take sodium bicarbonate or acetazolamide tablets while receiving your injections to help make sure that methotrexate is not concentrated in the kidneys. If you receive methotrexate in high doses, you will receive calcium folinate as well to lessen the side effects of methotrexate.

It is possible that you will only get methotrexate. In the case of cancer, it is also possible that you will receive so-called combination therapy in which you must take several medicines.

Your body weight, age, general condition of health, your response to the medicine and whether other medicines are required at the same time will also influence the dose you receive.

The following table summarises recommended methotrexate doses for intravenous administration:

<b>Low-dose therapy</b> (e.g. low risk patients suffering from gynaecological cancer [choriocarcinoma, trophoblastic disease], breast cancer, head and neck cancer, preventing relapse of acute lymphocytic leukaemia in children and adults, bladder cancer)	Single dose below 100 mg/m <sup>2</sup> BSA*
<b>Medium-dose therapy</b> (e.g. high risk patients suffering from gynaecological cancer [choriocarcinoma, trophoblastic disease], Non Hodgkin's lymphoma in children and adults)	Single dose from 100 up to 1 000 mg/m <sup>2</sup> BSA*
<b>High-dose therapy</b> (e.g. Non Hodgkin's lymphoma in children, in central nervous system localised Non Hodgkin's lymphoma, bone cancer (osteosarcoma), acute lymphocytic leukaemia in children and adults)	Single dose above 1 000 mg/m <sup>2</sup> BSA*

\* mg/m<sup>2</sup> BSA = milligram/square meter of body surface area

### Use in children

Methotrexate should be used with caution in children. Standard therapy protocols should be consulted for doses and method and sequence of administration.

Doses must be carefully calculated in children.

### Elderly patients

Methotrexate should be used with extreme caution in elderly patients. A dose reduction should be considered. Elderly patients should be monitored closely for early signs of methotrexate toxicity.

### Patients with renal/hepatic dysfunction

Care should be taken in patients with impaired liver or kidney function. Such patients should be monitored closely using regular liver and kidney function tests to avoid severe toxicity.

### Method of administration

Methotrexate 100 mg/ml must be given only by injection or infusion.

Your doctor or nurse will give you Methotrexate 100 mg/ml as injection either into one of your veins (e.g. as bolus or infusion), arteries or a muscle.

### If you receive more Methotrexate 100 mg/ml than you should

Since Methotrexate 100 mg/ml will usually be given to you by a doctor or nurse under carefully controlled conditions, it is unlikely that you will be given too much or that you will miss a dose. If you have received too much of Methotrexate 100 mg/ml or if it is suspected that you may have received too much, appropriate action will be taken promptly by your healthcare specialist team.

Overdose symptoms may include easy bruising or bleeding, unusual weakness, mouth sores, nausea, vomiting, black or bloody stools, coughing up blood or vomit that looks like coffee grounds and decreased urinating.

If you have any further questions on the use of this medicine, ask your doctor or pharmacist.

## 4. Possible side effects

Like all medicines, this medicine can cause side effects, although not everybody gets them.

All medicines can cause **allergic reactions** although serious allergic reactions are rare. Any sudden wheeziness, difficulty in breathing, swelling of the eyelids, face or lips, rash or itching (especially affecting your whole body) should be reported to a **doctor immediately**.

Methotrexate is a very toxic medicine and some patients have died or become very ill while being treated with it. Because the toxic reactions can occur at any time during therapy, you should watch for any side effects and report them to your doctor as soon as possible. Your doctor must inform you of early signs and symptoms of toxicity.

The most common side effects are ulcer and inflammation of the mouth, reduced blood cell counts, nausea, vomiting and abdominal discomfort. When inflammation of the mucous membranes (stomatitis) or diarrhoea occur, therapy with methotrexate should be discontinued due to the danger of bleeding in the bowel or perforation of the bowel.

### **Serious side effects**

If you develop any of the following side effects, contact your doctor **immediately**:

- inflammation of the lung with breathlessness (symptoms may be general illness; dry, irritating cough; shortness of breath, breathlessness at rest, chest pain, or fever)
- skin rashes or blistering of the skin or mucous membranes
- unusual bleeding (including vomiting blood) or bruising
- severe diarrhoea
- ulcer in mouth
- sore throat
- black or tarry stools
- blood in the urine or stools
- severe infection caused by viruses or bacteria

### **Other possible side effects of Methotrexate 100 mg/ml:**

**Very common:** may affect more than 1 in 10 people

- Reduced white blood cells and platelets
- Allergic reactions, fever, inflammation of veins, decreased resistance to infection, shock
- Disorders of the mouth, stomach and intestines like mucositis (mucus membrane inflammation, e.g. inflammation of the gums, tongue, throat, mouth, intestines), lack of appetite, feeling sick

**Common:** may affect up to 1 in 10 people

- Herpes zoster
- Reduced red blood cells, reduction on all blood cells
- Headache, dizziness, drowsiness, sleepiness
- Inflammation of the lung; the pulmonary toxicity may manifest as fever, cough (especially dry and non-productive), difficulties or increase in the frequency of breathing, chest pain and/or abnormal findings on chest radiography and/or tests of respiratory function
- Diarrhoea
- Elevated liver enzymes
- Rash, itching, formation of blisters, redness and inflammation
- Impairment of renal function

**Uncommon:** may affect up to 1 in 100 people

- Pneumonia
- Lymphoma
- Diabetes
- Depression
- Seizures, leukoencephalopathy (inflammation of the brain), manifested by ventricular enlargement (expansion of the fluid spaces inside the brain), incomplete palsy affecting one or both sides of the body, confusion, poor mental function associated with confusion, forgetfulness and difficulty concentrating

- Vasculitis (inflammation of blood vessels)
- Lung fibrosis (increase in the connective tissue), fluid between the lungs and chest wall (pleural effusion)
- Vomiting, gastrointestinal ulcerations, inflammation of the pancreas
- Loss of hair, nettle rash, photosensitivity, pigmentary changes (discolouration of the skin), loss of skin tissue, impaired wound healing
- Fibrosis (increase in the connective tissue), cirrhosis (transformation of the tissue with hardening and abolition of the normal structure of the organ), fatty degeneration of the liver or other histologic (tissue) changes in the liver
- Osteoporosis, pain in the joints, muscle pain
- Renal failure, inflammation of the urinary bladder, pain or difficulty in passing urine
- Malformations of the foetus
- Vaginal discomfort
- Fever without any detectable cause

**Rare:** may affect up to 1 in 1,000 people

- Sepsis
- Anaemia
- Mood swings, irritability
- Speech disorder, subtle cognitive dysfunction (easily disturbed attention), mental disturbance, muscle weakness
- Impairment of vision, serious visual changes, blurred vision
- Low blood pressure
- Haematoma, point-like or small flat bleeding, complications resulting from the formation of blood clots in veins and arteries
- Upper respiratory tract infection
- Melaena (red to black stools), inflammation of the mucosa in the mouth and bowel
- Hepatitis (inflammation of the liver)
- Acne, an increase in rheumatic nodules, increased colouration or inflammation or detachment of the nails, nodulosis (formation of nodules under the skin)
- Stress fracture
- High level of uric acid and/or urea in the blood
- Abortion
- Menstrual dysfunction (periods may become less frequent or even stop completely)
- Chills, malaise and undue fatigue, sweating

**Very rare:** may affect up to 1 in 10,000 people

- Virus infections (e.g. cytomegalovirus), severe other infections, fungal infections
- Tumour lysis syndrome (renal failure due to massive destruction of rapidly growing tumour cells)
- Abnormal low numbers of red blood cells (aplastic anaemia), abnormal low number in white blood cells such as neutrophils, eosinophils, abnormal growth of lymphocytes. These blood picture changes may increase your vulnerability for infections or may lead to unusual bleeding or bruising and you may observe signs of anaemia (weakness, tiredness). Lymphoproliferative disorders (excessive growth of white blood cells)
- Reduced antibodies
- Unusual sensations in the head, pain, paraesthesia (pins-and-needles sensation), significant intellectual deficit, dementia
- Transient blindness/vision loss, swelling, inflammation of the eyelid edges, conjunctivitis (inflammation of the eye conjunctiva), unusual formation of tears, photophobia
- Pericarditis (inflammation of the outer lining of the heart), pericardial effusion and tamponing (collection of fluid and blood, respectively, in the space between the outer lining of the heart and the heart muscle)
- Asthma-like symptoms (e.g. cough, difficulty breathing), pneumonia infection caused by bacteria



- Unusual bleeding from the mouth, stomach and intestines, increased risk of perforation and toxic megacolon (severe complication with massive dilatation of the colon and severe pain)
- Acute liver cell death with liver failure
- Telangiectasia (expansion of small superficial blood vessels in the skin), worsening of psoriasis (with concomitant UV therapy), formation of boils, a "recall" of radiation dermatitis (inflammation of the skin) and sunburn
- Blood in the urine, elevated protein level in the urine
- Death of the unborn baby
- Reduced or faulty formation of sperm and egg cells, infertility, loss of interest in sex/impotence, development of the breast gland in males, vaginal discharge
- Sudden death

**Not known:** frequency cannot be estimated from the available data

- Malabsorption (disturbances of uptake of nutrition with consequences such as body weight loss)
- Psychosis (severe mental illness)
- Pulmonary oedema (fluid in the lung that may lead to difficulty breathing)
- Reactivation of pre-existing hepatitis
- Exfoliative dermatitis (redness and shedding of skin), skin necrosis (loss of skin tissue), petechiae (red spots on the skin)
- Aseptic necrosis of the femoral head (loss of bone tissue in the hip joint), bone damage in the jaw (secondary to excessive growth of white blood cells)

Local reactions at the injection side can occur and include effects such as burning sensation or injuries (sterile abscesses, loss of adipose tissue).

In cases of acute lymphocytic leukaemia, methotrexate can cause pain in the left epigastric region (the area overlying the stomach, below the left lower border of the rib cage; inflammation of the space above the spleen due to destruction of the leukaemic cells).

There have been reports on the manifestation of lymphomas which were, in some cases, reversible after discontinuing methotrexate therapy.

### **Reporting of side effects**

If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via the Yellow Card Scheme at: [www.mhra.gov.uk/yellowcard](http://www.mhra.gov.uk/yellowcard) or search for MHRA Yellow Card in the Google Play or Apple App Store. By reporting side effects you can help provide more information on the safety of this medicine.

## **5. How to store Methotrexate 100 mg/ml**

Keep this medicine out of the sight and reach of children.

Keep the vial in the outer carton in order to protect from light.

Do not store above 25 °C.

For single dose use only. Discard any unused solution immediately and safely after initial use. This medicine should only be administered by a medically qualified person, e.g. a doctor.

Do not use this medicine after the expiry date which is stated on the label.

Any unused product or waste should be disposed of in accordance with local requirements for example by incineration.

## **6. Contents of the pack and other information**

### **What Methotrexate 100 mg/ml contains**

- The active substance is methotrexate. Each 1 ml of this sterile solution for injection contains 100 milligrams methotrexate.
- The other ingredients are sodium hydroxide, water for injections and nitrogen.

### **What Methotrexate 100 mg/ml looks like and contents of the pack**

Methotrexate 100 mg/ml is an orange-yellow and sterile solution in clear glass vials.

Each pack contains 1 vial of 10 or 50 ml solution.

Not all pack sizes may be marketed.

### **Marketing Authorisation Holder and Manufacturer**

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**This medicine is authorised in the Member States of the European Economic Area and in the United Kingdom (Northern Ireland) under the following names:**

Germany: Methotrexat medac 100 mg/ml Injektionslösung  
United Kingdom (Northern Ireland): Methotrexate 100 mg/ml solution for injection

**This leaflet was last revised in 01/2023.**