

## Package leaflet: Information for the patient

### Doxorubicin hydrochloride 2 mg/ml solution for infusion

#### Doxorubicin hydrochloride

**Read all of this leaflet carefully before you receive this medicine 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.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- 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 Doxorubicin hydrochloride is and what it is used for
2. What you need to know before you receive Doxorubicin hydrochloride
3. How Doxorubicin hydrochloride is given
4. Possible side effects
5. How to store Doxorubicin hydrochloride
6. Contents of the pack and other information

#### **1. What Doxorubicin hydrochloride is and what it is used for**

Doxorubicin belongs to a group of medicines known as anthracyclines. It works by killing tumour and blood cancer cells. Your doctor can explain how doxorubicin might help in your particular condition.

This medicine is used to treat:

- breast cancer
- ovarian cancer
- uterine cancer
- bladder cancer
- lung cancer
- thyroid cancer
- soft tissue and bone cancer (sarcoma)
- neuroblastoma (cancer of the nerve cells)
- Wilms' tumour
- malignant lymphoma (Hodgkin's and non-Hodgkin's)
- leukaemia (cancer causing abnormal production of white blood cells)
- cancer of white blood cells (multiple myeloma)

#### **2. What you need to know before you receive Doxorubicin hydrochloride**

**You must not receive Doxorubicin hydrochloride in the following cases. Please tell your doctor**

- if you are allergic to doxorubicin or any of the other ingredients of this medicine (listed in section 6) or to other anthracyclines.
- if you have low blood cell counts (your bone marrow is not working well).
- if you have, or ever have had, any **heart problems**.
- if you have received **doxorubicin, other anthracyclines** (above a certain total dose), **other anti-tumour medicines or immunosuppressive medicines** before.

- if you tend to **bleed easily**.
- if you suffer from any kind of **infection**.
- if you suffer from **severe mouth ulcers** (especially caused by previous anti-tumour treatment including radiation).
- if you have **severe liver problems**.
- if you are **breast-feeding**.

Additionally, in case of intravesical (placed directly into the bladder through a catheter) treatment Doxorubicin hydrochloride must not be used,

- if the cancer has spread into the wall of your bladder.
- if you have a **bladder or urinary tract infection**.
- if there are problems with catheterisation (insertion of a small plastic tube into the urethra).
- if you have **blood in your urine**.

### Warnings and precautions

Talk to your doctor, pharmacist or nurse before you are given Doxorubicin hydrochloride.

Before or during treatment with Doxorubicin hydrochloride monitoring of heart, liver and kidney function is recommended as well as monitoring of blood counts and the lungs. Daily inspection of the mouth cavity for mucosal changes is also recommended.

Special care should be taken

- if you have had any radiotherapy before or taken medicines that might have side effects on your heart such as trastuzumab (a medicine used to treat cancer).
- if you are pregnant, are planning to have a baby sometime in the future or if you want to father a child.
- if you are on a controlled sodium diet.

If there is a burning sensation in the area of the infusion, this can be a sign of an injection error and the infusion must be stopped immediately.

Talk to your doctor if you have had or are due to have any live or live-attenuated vaccinations. You should avoid contact to persons recently vaccinated against polio when you are under treatment with Doxorubicin hydrochloride.

### Other medicines and Doxorubicin hydrochloride

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

*The following medicines can interact with Doxorubicin hydrochloride:*

- Other cytostatics (medicines against cancer) e.g. anthracyclines (daunorubicin, epirubicin, idarubicin), cisplatin, cyclophosphamide, cyclosporin, cytarabine, dacarbazine, dactinomycin, fluorouracil, mitomycin C, taxanes (e.g. paclitaxel), mercaptopurine, methotrexate, streptozocin and sorafenib
- Cardioactive medicines (to treat heart diseases), e.g. calcium channel blockers, verapamil, digoxin
- Inhibitors of cytochrome P-450 (medicines (e.g. cimetidine) that lower the functionality of cytochrome P-450 enzymes. These enzymes are important for breaking down toxins in your body.
- Medicine inducing cytochrome P-450 (e.g. rifampicin, barbiturates)
- Antiepileptic medicines (e.g. carbamazepine, phenytoin, valproate)
- Heparin (prevents the clotting of the blood)
- Amidopyrine derivatives (pain-killers)
- Antiretroviral medicines (medicines to treat infections with special forms of viruses, e.g. ritonavir against AIDS)
- Chloramphenicol and sulphonamides (medicines to treat bacterial infections)

- Progesterone (e.g. used in pregnancy when there is a risk of miscarriage)
- Amphotericin B (to treat fungal infections)
- Live vaccines (e.g. against polio myelitis, malaria)
- Trastuzumab (used in the treatment of breast cancer) which can take up to 7 months to be removed from the body. As trastuzumab may affect the heart, you should not use doxorubicin for up to 7 months after you have stopped taking trastuzumab. If doxorubicin is used before this time, then your heart function must be carefully monitored.
- Clozapine (e.g. used to treat psychosis like schizophrenia)
- Medicines used to lower uric acid in your blood. The dose of such medicines may need adjustment.

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

### **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

If you are a woman, you must not get pregnant during treatment with doxorubicin. If you get pregnant during treatment with doxorubicin, please inform your doctor immediately.

If there is a desire to have children after completion of the therapy, genetic counselling is recommended in advance.

#### Contraception in males and females

If you are a woman you should practice effective contraception during the treatment and for at least 7 months after the last dose.

If you are a man, you should take adequate precautions to ensure that your partner does not become pregnant during your treatment with doxorubicin and for at least 4 months after the last dose.

### **Doxorubicin is not recommended if you are pregnant.**

#### Breast-feeding

You should not breastfeed during therapy with Doxorubicin hydrochloride and for at least 2 weeks after the last dose.

#### Fertility

If you are considering becoming parents after the treatment please talk to your doctor. Doxorubicin may cause permanent infertility. If you are a male you should therefore discuss the possibility of freezing sperm before treatment start (cryo-preservation or cryo-conservation) with your doctor. Women should also seek a consultation for fertility preservation prior to therapy.

Ask your doctor or pharmacist for advice before taking any medicine.

### **Driving and using machines**

Due to the frequent occurrence of drowsiness, nausea and vomiting, you must not drive or operate machinery.

### **Doxorubicin hydrochloride contains sodium**

Please tell your doctor if you are on a low-sodium diet. He/she will take into account that this medicine contains 0.154 mmol (or 3.54 mg) sodium per ml of solution. The different pack sizes of Doxorubicin hydrochloride contain the following amounts of sodium:

5 ml vial:	This pack size contains less than 1 mmol sodium (23 mg), that is to say essentially 'sodium-free'.
10 ml vial:	This pack size contains 35.42 mg sodium (main component of cooking/table salt). This is equivalent to 1.77% of the recommended maximum daily dietary intake of sodium for an adult.
25 ml vial:	This pack size contains 88.55 mg sodium (main component of cooking/table salt). This is equivalent to 4.43% of the recommended maximum daily dietary intake of sodium for an adult.
75 ml vial:	This pack size contains 265.65 mg sodium (main component of cooking/table salt). This is equivalent to 13.28% of the recommended maximum daily dietary intake of sodium for an adult.
100 ml vial:	This pack size contains 354.20 mg sodium (main component of cooking/table salt). This is equivalent to 17.71% of the recommended maximum daily dietary intake of sodium for an adult.

### **3. How Doxorubicin hydrochloride is given**

#### **Method and routes of administration**

Do not administer the medicine yourself. Your medicine will be given to you as part of an intravenous infusion, into a blood vessel, under the direction of specialists. You will be monitored regularly both during and after your treatment.

If you suffer from superficial bladder cancer it is possible that you may receive your medicine into your bladder (intravesical use).

#### **Dosage**

Your doctor will calculate the dose you will be given. This will depend on your body surface area (calculated from your height and weight) and other anticancer medicines or treatments you are currently having. Your doctor will decide individually on the frequency of dosing. If you have any questions about your treatment, ask your doctor, nurse or pharmacist.

#### **Patients with reduced liver or kidney function**

If your liver or kidney function is reduced, the dose should be decreased. Your doctor will tell you how much you need.

#### **Use in children/obese patients/elderly/patients after radiotherapy**

The dose may need to be reduced in children, in obese patients and the elderly or if you have received any radiotherapy. Your doctor will tell you how much you need.

#### **If you received more Doxorubicin hydrochloride than you should**

During and after treatment you will be carefully monitored by your doctor or nurse. The symptoms of an overdose are an extension of the possible side effects of doxorubicin. Particularly blood changes, gastrointestinal and heart problems may occur. Heart problems may even occur up to six months after you received an overdose.

In case of an overdose your doctor will take appropriate measures. These may include a blood transfusion and/or treatment with antibiotics.

Please tell your doctor if any of the symptoms occur.

**If treatment with Doxorubicin hydrochloride is interrupted or stopped**

Your doctor will decide on the duration of your treatment with Doxorubicin hydrochloride. If the treatment is stopped before the advised course of treatment is finished, the effects of the doxorubicin therapy might be reduced.

Ask your doctor for advice if you wish to stop the treatment.

**4. Possible side effects**

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

**Contact your doctor straight away if you notice any of the following serious side effects:**

They have been ranked according to their potential seriousness.

- You may develop **hives, fever, chills, severe hypersensitivity**. This type of allergic reaction can be life-threatening.
- Heart problems – for example you may notice your **heart beating abnormally quickly**, with an increase in pulse rate. In case of heart problems, routine ECG monitoring is commonly applied. If you have suffered from heart problems (even a long time ago) before treatment with Doxorubicin hydrochloride make sure to tell your doctor about this.
- Blood changes: decrease in certain kind of white blood cells (your **vulnerability for infections** may increase), decrease in platelets (you may suffer from **unusual bleedings**) and you may observe **signs of anaemia** (weakness, tiredness, laboured breathing with a feeling of apprehension).

Your urine may be coloured red, particularly the first time that you pass urine after each injection of Doxorubicin hydrochloride. This is nothing to worry about and your urine will soon return to its normal colour.

Other side effects sorted by frequency.

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

- infections
- decreased activity in your bone marrow (myelosuppression), lack of white blood cells (leukopenia), reduction in the number of certain white blood cells and platelets (neutropenia and thrombocytopenia), decreased number of red blood cells (anaemia), lack of oxygen in the tissues (tissue hypoxia) or death resulting from severe decreased bone marrow activity
- reduced number of certain white blood cells accompanied by fever (febrile neutropenia)
- inflammation in a vein leading to a blood clot (thrombophlebitis)
- feeling and /or being sick (nausea and/or vomiting)
- inflammation of membranes in your digestive tract, starts with burning sensations in mouth or pharynx (mucositis)
- inflammation of the mouth lining (stomatitis)
- diarrhoea – may result in dehydration
- hand-foot syndrome (painful reddening with swelling of the palms and soles of the feet)
- separation of nail plates
- hair loss (alopecia)
- localised injury of the skin, reddening of the skin
- increased sensitivity of your skin to sunlight
- skin rashes
- shivering, fever, feeling of weakness (asthenia)
- abnormal results of heart examinations (asymptomatic decrease in left ventricular ejection fraction (LVEF)), abnormal electrocardiogram (ECG), abnormal liver values (transaminases)
- weight gain.

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

- cardiac damage such as disease of the heart muscle (cardiomyopathy), fast heartbeat (tachycardia), heart rhythm disorder with fast heartbeat (tachyarrhythmia), slowed heartbeat (bradycardia), heart failure, heart weakness
- eating disorder (anorexia)
- bladder inflammation sometimes with painful urination, need to urinate more often or during night or blood in urine and urinary bladder spasms (following administration into the bladder)
- serious infection of the whole body (sepsis)
- bacterial infection of the blood (septicaemia)
- skin and nails may appear darker than usual
- itchy skin
- hives
- local hypersensitivity in the area treated with radiation
- conjunctivitis (usually causing red watery eyes)
- vein inflammation (phlebitis)
- bleeding
- inflammation of the gullet, abdominal pain or burning sensation.

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

- dehydration
- induration or stiffening of the vein wall (phleboscлерosis)
- inflammation in the large bowel (colitis)
- inflammation of the colon (also in severe form with sometimes serious infections) in combination with doxorubicin and cytarabine (anti-cancer medicines)
- inflammation of the stomach with possible bleeding (erosive gastritis)
- bleeding in stomach or bowel
- ulceration and necrosis (death of cells of the tissue) of the digestive tract
- blood poisoning with impairment of organ functions and low blood pressure (septic shock)
- blood cancer arisen from combined treatment with a special kind of other anti-cancer medicines (secondary leukaemia, i.e. acute lymphocytic leukaemia)
- clot formation in a vessel (thromboembolism).

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

- rapid break down of cancer cells causing metabolic imbalances (tumour lysis syndrome)
- tissue death (tissue necrosis)
- acute and potentially life-threatening general allergic reaction including skin rash, itching, fever, chills, allergic painful swelling of the eyelids and tongue and breathing difficulties (anaphylactic reactions)
- rash-like symptoms (erythematous reactions) along the vein used for the injection
- dizziness
- inflammation of the lung after radiation
- breathing disorders, swelling of the nasal lining, rapid breathing and difficult breathing
- increased flow of tears.

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

- high uric acid level in blood (hyperuricaemia)
- certain heart rhythm disorder (atrioventricular block)
- low blood pressure and circulation (shock)
- mucosal injuries of the gastrointestinal tract (erosions), discolouration inside the mouth
- general muscle weakness
- absence of menstruation
- low sperm volume or lack of sperm

- general malaise.

**Not known (cannot be estimated from the available data):**

- hot flushes
- severe heart failure (loss of cardiac function)
- irregular heart beat
- coughing or difficulty in breathing (bronchospasm)
- liver disorder
- red colouration of the urine 1 – 2 days after administration
- loss of renal function may lead to renal failure
- infertility in men
- inflamed cornea (keratitis)
- joint pain
- a stinging or burning sensation at the infusion site.

Burning, redness and swelling at the administration site may occur. If this is the case during an infusion you should inform the doctor or nurse, because the injection should be stopped immediately and restarted at another site.

**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 Doxorubicin hydrochloride**

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

Do not use this medicine after the expiry date which is stated on the label and carton. The expiry date refers to the last day of that month.

Store the unopened vials in a refrigerator (2 – 8 °C). Keep the vial in the outer carton in order to protect from light.

The product should be used immediately after opening the vial.

For single dose use only. Any unused solution should be discarded immediately after initial use.

Do not use this medicine if you notice that the solution is not clear, red and free of particles.

Do not throw away any medicines via wastewater. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

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

**What Doxorubicin hydrochloride contains**

1 ml contains 2 mg doxorubicin hydrochloride.

Each 5 ml vial contains a total content of doxorubicin hydrochloride of 10 mg.

Each 10 ml vial contains a total content of doxorubicin hydrochloride of 20 mg.

Each 25 ml vial contains a total content of doxorubicin hydrochloride of 50 mg.

Each 75 ml vial contains a total content of doxorubicin hydrochloride of 150 mg.

Each 100 ml vial contains a total content of doxorubicin hydrochloride of 200 mg.

The other ingredients are sodium chloride, hydrochloric acid (for pH adjustment) and water for injections.

### **What Doxorubicin hydrochloride looks like and contents of the pack**

Doxorubicin hydrochloride is a clear, red solution which is practically free of particles.

Pack sizes:

The solution is available in packs of 1 or 5 vials containing 5/10/25/75 or 100 ml solution.

This corresponds to 10/20/50/150 or 200 mg of the active substance, doxorubicin hydrochloride, per vial.

Not all pack sizes may be marketed.

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

medac

Gesellschaft für klinische Spezialpräparate mbH

Theaterstr. 6

22880 Wedel

Germany

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

Czech Republic	Doxorubicin medac 2 mg/ml infuzní roztok
Finland	Doxorubicin medac 2 mg/ml infuusioneste, liuos
Germany	Adrimedac 2 mg/ml Infusionslösung
Poland	Doxorubicin medac
Portugal	Doxorrubicina medac
Slovakia	Doxorubicin medac 2 mg/ml infúzny roztok
United Kingdom (Northern Ireland)	Doxorubicin hydrochloride

**This leaflet was last revised in May 2024.**

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The following information is intended for healthcare professionals only:

#### **Incompatibilities**

Doxorubicin should not be mixed with heparin as a precipitate may form and it should not be mixed with 5-fluorouracil as degradation may occur. Prolonged contact with any solution of an alkaline pH should be avoided as it will result in hydrolysis of the medicine.

In the absence of compatibility studies, this medicinal product must not be mixed with other medicinal products.

#### **Opened vials**

The product should be used immediately after opening the vial.

#### **Prepared infusion solutions**

Chemical and physical in-use stability at a concentration of 0.5 mg/ml has been demonstrated in sodium chloride 0.9 % and glucose 5 % for up to 7 days at 2 °C to 8 °C or room temperature (20 °C to 25 °C) when prepared in PE-bags and protected from light.

From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2 °C to 8 °C, unless dilution has taken place in controlled and validated aseptic conditions.



**Special precautions for disposal and other handling**

For single use only.

Any unused product or waste material should be disposed of in accordance with local requirements.

Observe guidelines for handling cytotoxic medicines.

The following protective recommendations are given due to the toxic nature of this substance:

- Personnel should be trained in good technique for handling.
- Pregnant staff should be excluded from working with this medicine.
- Personnel handling doxorubicin should wear protective clothing: goggles, gowns, disposable gloves and masks.
- A designated area should be defined for reconstitution (preferably under a laminar flow system). The work surface should be protected by disposable, plastic-backed and absorbent paper.
- All items used for administration or cleaning, including gloves, should be placed in high risk waste disposal bags for high temperature (700 °C) incineration.
- In case of skin contact, thoroughly wash the affected area with soap and water or sodium bicarbonate solution. However, do not graze the skin by using a scrubbing brush.
- In case of contact with eye(s), hold back the eyelid(s) and flush the affected eyes with copious amounts of water for at least 15 minutes. Then seek medical evaluation by a physician.
- Spillage or leakage should be treated with dilute sodium hypochlorite (1 % available chlorine) solution, preferably soaking overnight and then rinse with water.
- All cleaning materials should be disposed of as indicated previously.
- Always wash hands after removing gloves.