

## SUMMARY OF PRODUCT CHARACTERISTICS

### 1. NAME OF THE MEDICINAL PRODUCT

Tranexamic acid Pfizer 100 mg/mL solution for injection

### 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 1 mL contains 100 mg tranexamic acid.

Each 5 mL ampoule contains 500 mg tranexamic acid.

Each 10 mL ampoule contains 1000 mg tranexamic acid.

For the full list of excipients, see section 6.1.

### 3. PHARMACEUTICAL FORM

Solution for injection/infusion.

Clear, colourless solution with pH of 6.5- 8.0.

### 4. CLINICAL PARTICULARS

#### 4.1 Therapeutic indications

Tranexamic acid is indicated in adults and children from one year in prevention and treatment of haemorrhages due to general or local fibrinolysis.

Specific indications include:

- Haemorrhage caused by general or local fibrinolysis such as:
  - Menorrhagia and metrorrhagia,
  - Gastrointestinal bleeding,
  - Haemorrhagic urinary disorders, further to prostate surgery or surgical procedures affecting the urinary tract,
- Ear Nose Throat surgery (adenoidectomy, tonsillectomy, dental extractions),
- Gynaecological surgery or disorders of obstetric origin,
- Thoracic and abdominal surgery and other major surgical intervention such as cardiovascular surgery,
- Management of haemorrhage due to the administration of a fibrinolytic agent.

#### 4.2 Posology and method of administration

Posology

### *Adults*

Unless otherwise prescribed, the following doses are recommended:

1. Standard treatment of local fibrinolysis:  
0.5 g (1 ampoule of 5 mL) to 1 g (1 ampoule of 10 mL or 2 ampoules of 5 mL) tranexamic acid by slow intravenous injection or infusion (= 1 mL/minute) two to three times daily
2. Standard treatment of general fibrinolysis:  
1 g (1 ampoule of 10 mL or 2 ampoules of 5 mL) tranexamic acid by slow intravenous injection or infusion (= 1 mL/minute) every 6 to 8 hours, equivalent to 15 mg/kg body weight (BW)

### *Renal impairment*

For patients with mild to severe renal impairment, the dosage of tranexamic acid should be reduced according to the serum creatinine level:

Serum creatinine micromol/L	mg/10 mL	Dose IV	Administration
120 to 249	1.35 to 2.82	10 mg/kg BW	Every 12 hours
250 to 500	2.82 to 5.65	10 mg/kg BW	Every 24 hours
> 500	> 5.65	5 mg/kg BW	Every 24 hours

### *Hepatic impairment*

No dose adjustment is required in patient with hepatic impairment.

### *Paediatric population*

In children from 1 year, for current approved indications as described in section 4.1, the dosage is in the region of 20 mg/kg/day. However, data on efficacy, posology and safety for these indications are limited.

The efficacy, posology and safety of tranexamic acid in children undergoing cardiac surgery have not been fully established. Currently available data are limited and are described in section 5.1.

### *Elderly*

No reduction in dosage is necessary unless there is evidence of renal failure.

### Method of administration

The administration is strictly limited to slow intravenous injection or infusion (see section 6.6) of maximum 1 mL per minute.

**TRANEXAMIC ACID SHOULD ONLY BE ADMINISTERED INTRAVENOUSLY and should not be administered intrathecally or epidural** (see sections 4.3 and 4.4).

IN ORDER TO REDUCE THE RISK OF FATAL MEDICATION ERRORS DUE TO INCORRECT ROUTE OF ADMINISTRATION OF TRANEXAMIC ACID, IT IS STRONGLY RECOMMENDED TO LABEL THE SYRINGES CONTAINING TRANEXAMIC ACID (see sections 4.3, 4.4 and 6.6).

## **4.3 Contraindications**

Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

Acute venous or arterial thrombosis (see section 4.4).

Fibrinolytic conditions following consumption coagulopathy except in those with predominant activation of the fibrinolytic system with acute severe bleeding (see section 4.4).

History of convulsions.

Intrathecal, epidural, intraventricular injection and intracerebral application (risk of cerebral oedema and convulsions and death).

#### **4.4 Special warnings and precautions for use**

The indications and method of administration indicated above should be followed strictly:

- Intravenous injections or infusions should be given very slowly (max. 1 mL per minute)
- Tranexamic acid must not be administered by the intramuscular route

##### Risk of medication errors due to incorrect route of administration

Tranexamic acid Pfizer is for intravenous use only. Intrathecal, epidural, intraventricular and intracerebral use of Tranexamic acid Pfizer is contraindicated (see section 4.3). Serious adverse reactions including fatal events have been reported when tranexamic acid was inadvertently administered intrathecally. These events have included severe back, gluteal and lower limb pain, myoclonus and generalised seizures, and cardiac arrhythmias.

Care should be exercised to ensure the correct route of administration of Tranexamic acid Pfizer. Healthcare professionals should be aware of the potential for confusion of Tranexamic acid Pfizer with other injectables which could result in inadvertent intrathecal administration of tranexamic acid. This includes in particular intrathecally administered injectables that may be used during the same procedure as tranexamic acid.

Syringes containing Tranexamic acid Pfizer should be clearly labelled with the intravenous route of administration.

##### Convulsions

Cases of convulsions have been reported in association with tranexamic acid treatment. In coronary artery bypass graft (CABG) surgery, most of these cases were reported following intravenous (IV) injection of tranexamic acid in high doses. With the use of the recommended lower doses of tranexamic acid, the incidence of post-operative seizures was the same as that in untreated patients.

##### Visual disturbances

Attention should be paid to possible visual disturbances including visual impairment, vision blurred, impaired colour vision and if necessary, the treatment should be discontinued. With continuous long-term use of tranexamic acid, regular ophthalmologic examinations (eye examinations including visual acuity, colour vision, fundus, visual field etc.) are indicated. With pathological ophthalmic changes, particularly with diseases of the retina, the physician must decide after consulting a specialist on the necessity for the long-term use of tranexamic acid in each individual case.

##### Haematuria

In case of haematuria from the upper urinary tract, there is a risk for urinary obstruction at the lower levels of the tract.

If left untreated, urinary obstruction may lead to serious consequences such as renal insufficiency, urinary tract infection, hydronephrosis, and anuria. Therefore, close monitoring is recommended for those patients with haematuria or risk of haematuria from the upper urinary tract.

#### Thromboembolic events

Before use of tranexamic acid, risk factors of thromboembolic disease should be considered. In patients with a history of thromboembolic diseases or in those with increased incidence of thromboembolic events in their family history (patients with a high risk of thrombophilia), tranexamic acid should only be administered if there is a strong medical indication after consulting a physician experienced in haemostaseology and under strict medical supervision (see section 4.3).

Tranexamic acid should be administered with care in patients using hormonal contraception because of the increased risk of thrombosis (see section 4.5).

#### Disseminated intravascular coagulation

Patients with disseminated intravascular coagulation (DIC) should in most cases not be treated with tranexamic acid (see section 4.3). If tranexamic acid is given it must be restricted to those in whom there is predominant activation of the fibrinolytic system with acute severe bleeding.

Characteristically, the haematological profile approximates to the following: reduced euglobulin clot lysis time; prolonged prothrombin time; reduced plasma levels of fibrinogen, factors V and VIII, plasminogen fibrinolysin and alpha-2 macroglobulin; normal plasma levels of P and P complex; i.e. factors II (prothrombin), VIII and X; increased plasma levels of fibrinogen degradation products; a normal platelet count. The foregoing presumes that the underlying disease state does not of itself modify the various elements in this profile. In such acute cases a single dose of 1 g tranexamic acid is frequently sufficient to control bleeding. Administration of tranexamic acid in DIC should be considered only when appropriate haematological laboratory facilities and expertise are available.

### **4.5 Interaction with other medicinal products and other forms of interaction**

No interaction studies have been performed. Simultaneous treatment with anticoagulants must take place under the strict supervision of a physician experienced in this field. Medicinal products that act on haemostasis should be given with caution to patients treated with tranexamic acid. There is a risk of increased thrombus-formation potential during concomitant use with hormonal contraception. Alternatively, the antifibrinolytic action of the drug may be antagonised with thrombolytic drugs.

### **4.6 Fertility, pregnancy and lactation**

#### Women of childbearing potential

Women of childbearing potential have to use effective contraception during treatment (see sections 4.4 and 4.5).

#### Pregnancy

Available data from published studies, case series and case reports with tranexamic acid use in pregnant women in the second and third trimester and at the time of delivery have not clarified

whether there is a drug-associated risk of miscarriage or adverse maternal or foetal outcomes. There are cases of foetal structural abnormalities that resulted in death of the newborn following administration of tranexamic acid to the mother during conception or the first trimester of pregnancy; however, due to other confounding factors the risk of major birth defects with use of tranexamic acid during pregnancy is not clear.

Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity (see section 5.3).

Tranexamic acid passes through the placenta. The concentration in cord blood after an intravenous injection of 10 mg/kg to pregnant women is about 30 mg/L, as high as in the maternal blood.

There were 13 clinical studies that described foetal and/or neonatal functional issues such as low Apgar score, neonatal sepsis, cephalohematoma and 9 clinical studies that discussed alterations to growth including low birth weight and preterm birth at 22-36 weeks of gestation in foetuses and infants exposed to tranexamic acid *in-utero*.

For decisions regarding the use of tranexamic acid during pregnancy, the potential risk of tranexamic acid administration on the foetus should always be considered along with the mother's clinical need for tranexamic acid; an accurate risk-benefit evaluation should drive the treating physician's decision.

#### Breast-feeding

Published literature reports the presence of tranexamic acid in human milk. There are limited data on the effects of tranexamic acid on the breast-fed child or the effects on milk production. The developmental and health benefits of breast-feeding should be considered along with the mother's clinical need for tranexamic acid and any potential adverse effects on the breast-fed child from tranexamic acid or from the underlying maternal condition.

Due to limited data, no final assessment can be established on the use of tranexamic acid during breast-feeding.

#### Fertility

There are no clinical data on the effects of tranexamic acid on fertility. In animal studies, tranexamic acid did not affect male or female fertility at clinically relevant doses (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

No studies have been performed on the ability to drive and use machines.

### **4.8 Undesirable effects**

The ADRs reported from clinical studies and post-marketing experience are listed below according to system organ class.

#### Tabulated list of adverse reactions

Adverse reactions reported are presented in table below. Adverse reactions are listed according to MedDRA primary system organ class. Within each system organ class, adverse reactions are ranked by frequency. Within each frequency grouping, adverse reactions are presented in the order of decreasing seriousness.

<b>System organ class</b>	<b>Common ≥ 1/100 to &lt; 1/10</b>	<b>Uncommon ≥ 1/1,000 to &lt; 1/100</b>	<b>Frequency not known (cannot be estimated from the available data)</b>
Immune system disorders			- Hypersensitivity reactions including anaphylaxis
Nervous system disorders			- Convulsions particularly in case of misuse (see sections 4.3 and 4.4)
Eye disorders			- Visual disturbances including impaired colour vision
Vascular disorders			- Malaise with hypotension, with or without loss of consciousness (generally following a too fast intravenous injection, exceptionally after oral administration) - Arterial or venous thrombosis at any sites
Gastrointestinal disorders	- Diarrhoea - Vomiting - Nausea		
Skin and subcutaneous tissue disorders		- Dermatitis allergic	

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions 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.

## **4.9 Overdose**

No case of overdose has been reported.

Signs and symptoms may include dizziness, headache, hypotension, and convulsions. It has been shown that convulsions tend to occur at higher frequency with increasing dose.

Management of overdose should be supportive.

## 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antihemorrhagics, Antifibrinolytics, Amino acids;  
ATC code: B02AA02

Tranexamic acid exerts an anti haemorrhagic activity by inhibiting the fibrinolytic properties of plasmin.

A complex involving tranexamic acid, plasminogen is constituted; the tranexamic acid being linked to plasminogen when transformed into plasmin.

The activity of the tranexamic acid-plasmin complex on the activity on fibrin is lower than the activity of free plasmin alone.

*In vitro* studies showed that high tranexamic dosages decreased the activity of complement.

### Paediatric population

#### *In children over one year old*

Literature review identified 12 efficacy studies in paediatric cardiac surgery which have included 1073 children, 631 having received tranexamic acid. Most of them were controlled versus placebo. Studied population was heterogenic in terms of age, surgery types, dosing schedules.

Study results with tranexamic acid suggest reduced blood loss and reduced blood product requirements in paediatric cardiac surgery under cardiopulmonary bypass (CPB) where there is a high risk of haemorrhage, especially in cyanotic patients or patients undergoing repeat surgery.

The most adapted dosing schedule appeared to be:

- first bolus of 10 mg/kg after induction of anaesthesia and prior to skin incision,
- continuous infusion of 10 mg/kg/h or injection into the CPB pump prime at a dose adapted on the CPB procedure, either according to a patient weight with a dose of 10 mg/kg dose, either according to CPB pump prime volume, last injection of 10 mg/kg at the end of CPB.

While studied in very few patients, the limited data suggest that continuous infusion is preferable, since it would maintain therapeutic plasma concentration throughout surgery.

No specific dose-effect study or PK study has been conducted in children.

## 5.2 Pharmacokinetic properties

### Absorption

Peak plasma concentrations of tranexamic acid are obtained rapidly after a short intravenous infusion after which plasma concentrations decline in a multi-exponential manner.

### Distribution

The plasma protein binding of tranexamic acid is about 3% at therapeutic plasma levels and seems to be fully accounted for by its binding to plasminogen. Tranexamic acid does not bind to serum albumin. The initial volume of distribution is about 9 to 12 litres.

Tranexamic acid passes through the placenta. Following administration of an intravenous injection of 10 mg/kg to 12 pregnant women, the concentration of tranexamic acid in serum ranged 10-53 microgram/mL while that in cord blood ranged 4-31 microgram/mL. Tranexamic acid diffuses rapidly into joint fluid and the synovial membrane. Following administration of an intravenous injection of 10 mg/kg to 17 patients undergoing knee surgery, concentrations in the joint fluids were similar to those seen in corresponding serum samples. The concentration of tranexamic acid in a number of other tissues is a fraction of that observed in the blood (breast milk, one hundredth; cerebrospinal fluid, one tenth; aqueous humor, one tenth). Tranexamic acid has been detected in semen where it inhibits fibrinolytic activity but does not influence sperm migration.

### Elimination

It is excreted mainly in the urine as unchanged drug. Urinary excretion via glomerular filtration is the main route of elimination. Renal clearance is equal to plasma clearance (110 to 116 mL/min). Excretion of tranexamic acid is about 90% within the first 24 hours after intravenous administration of 10 mg/kg body weight. Elimination half-life of tranexamic acid is approximately 3 hours.

### Other special populations

Plasma concentrations increase in patients with renal failure.

No specific pharmacokinetic study has been conducted in children.

## **5.3 Preclinical safety data**

### Carcinogenesis and mutagenesis

No evidence of carcinogenicity or mutagenicity was observed in conventional studies with tranexamic acid.

### Reproductive toxicity

In reproductive toxicity studies (fertility and early embryonic development studies, embryo-foetal development studies, and pre- and postnatal studies), tranexamic acid had no adverse effect on reproductive parameters of mice, rats and rabbits at clinically relevant doses.

### General toxicology

Retinal toxicity has been observed in nonclinical studies with tranexamic acid. The observed toxicity was characterised by retinal atrophy commencing with changes to the retinal pigmented epithelium and progressing to retinal detachment in cats. The toxicity appeared to be dose-related, and changes were partially reversible at lower doses. Effects (some fully reversible) were seen in cats at clinically relevant doses, effects in dogs were only observed at multiples of the clinical dose. Studies suggest that the underlying mechanism may be related to a transient retinal ischemia at higher dose exposures, linked to the known sympathomimetic effect of high plasma levels of tranexamic acid. The clinical relevance of these findings is unknown.

Epileptogenic activity has been observed in animals with intrathecal use of tranexamic acid.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.2 Incompatibilities**

This medicinal product should not be mixed with blood for transfusion or with solutions containing penicillin.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.3 Shelf life**

3 years

After first opening: the solution for injection/infusion is for single use only. Unused solution must be discarded.

Chemical and physical in-use stability has been demonstrated for 24 hours at 25°C.

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.

### **6.4 Special precautions for storage**

Do not freeze.

For storage conditions after first opening of the medicinal product, see section 6.3.

### **6.5 Nature and contents of container**

Packs with 5 or 10 Type I glass 5 mL ampoules, each ampoule containing 500 mg tranexamic acid.

Packs with 10 Type I glass 10 mL ampoules, each ampoule in an outer carton containing 1000 mg tranexamic acid.

Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

Healthcare professionals are strongly advised to label the Tranexamic acid Pfizer syringes during the withdrawal of the product from the ampoule for clear identification and proper route of administration, to help prevent inadvertent medication errors during administration to the patient.

Tranexamic acid Pfizer may be mixed with most solutions for infusion such as electrolyte solutions, carbohydrate solutions, amino acid solutions and dextran solutions. Heparin may be added to Tranexamic acid Pfizer.

Tranexamic acid Pfizer is for single use only. Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Pfizer Limited  
Ramsgate Road  
Sandwich

CT13 9NJ  
UK

**8. MARKETING AUTHORISATION NUMBER(S)**

PL 00057/1509

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF AUTHORISATION**

30/10/2013

**10. DATE OF REVISION OF THE TEXT**

12/04/2024