

## Pyrazinamide

### ● INDICATIONS AND DOSE

#### Tuberculosis, in combination with other drugs (standard unsupervised 6-month treatment)

##### ► BY MOUTH

- Child (body-weight up to 50 kg): 35 mg/kg once daily for 2 months (initial phase); maximum 1.5 g per day
- Child (body-weight 50 kg and above): 35 mg/kg once daily for 2 months (initial phase); maximum 2 g per day

#### Tuberculosis, in combination with other drugs (intermittent supervised 6-month treatment) (under expert supervision)

##### ► BY MOUTH

- Child (body-weight up to 50 kg): 50 mg/kg 3 times a week (max. per dose 2 g 3 times a week) for 2 months (initial phase)
- Child (body-weight 50 kg and above): 50 mg/kg 3 times a week (max. per dose 2.5 g 3 times a week) for 2 months (initial phase)

#### Congenital tuberculosis, in combination with other drugs

##### ► BY MOUTH

- Neonate: 35 mg/kg once daily for 2 months (initial phase).

### ● CAUTIONS Diabetes

### ● INTERACTIONS → Appendix 1: pyrazinamide

### ● SIDE-EFFECTS Appetite decreased · arthralgia · dysuria · flushing · gout aggravated · hepatic disorders · malaise · nausea · peptic ulcer aggravated · photosensitivity reaction · sideroblastic anaemia · skin reactions · splenomegaly · vomiting

### ● PREGNANCY Manufacturer advises use only if potential benefit outweighs risk.

### ● BREAST FEEDING Amount too small to be harmful.

### ● HEPATIC IMPAIRMENT Manufacturer advises avoid in severe impairment, acute hepatic disease and for up to 6 months after occurrence of hepatitis (risk of increased exposure).

### ● RENAL IMPAIRMENT

**Dose adjustments** If estimated glomerular filtration rate less than 30 mL/minute/1.73 m<sup>2</sup>, use 25–30 mg/kg 3 times a week.

### ● MONITORING REQUIREMENTS

- *Renal function* should be checked before treatment.
- *Hepatic function* should be checked before treatment. If there is no evidence of liver disease (and pre-treatment liver function is normal), further checks are only necessary if the patient develops fever, malaise, vomiting, jaundice or unexplained deterioration during treatment.

### ● PRESCRIBING AND DISPENSING INFORMATION In general, doses should be rounded up to facilitate administration of suitable volumes of liquid or an appropriate strength of tablet. Doses may also need to be recalculated to allow for weight gain in younger children.

The RCPCH and NPPG recommend that, when a liquid special of pyrazinamide is required, the following strength is used: 500 mg/5 mL.

### ● PATIENT AND CARER ADVICE

**Hepatic disorders** Patients or their carers should be told how to recognise signs of liver disorder, and advised to discontinue treatment and seek immediate medical attention if symptoms such as persistent nausea, vomiting, malaise or jaundice develop.

Medicines for Children leaflet: Pyrazinamide for treatment of tuberculosis [www.medicinesforchildren.org.uk/pyrazinamide-treatment-tuberculosis](http://www.medicinesforchildren.org.uk/pyrazinamide-treatment-tuberculosis)

- **MEDICINAL FORMS** There can be variation in the licensing of different medicines containing the same drug. Forms available from special-order manufacturers include: oral suspension, oral solution

#### Tablet

CAUTIONARY AND ADVISORY LABELS 8

#### ► Pyrazinamide (Non-proprietary)

**Pyrazinamide 500 mg** Pyrazinamide 500mg tablets | 30 tablet **[PoM]** £36.12 DT = £36.12

#### ► Zinamide (Genus Pharmaceuticals Ltd)

**Pyrazinamide 500 mg** Zinamide 500mg tablets | 30 tablet **[PoM]** £31.35 DT = £36.12

Combinations available: *Rifampicin with isoniazid and pyrazinamide*, p. 380

## 1.5 Urinary tract infections

### Urinary-tract infections

#### Description of condition

Urinary-tract infections are common bacterial infections usually caused by *Escherichia coli*, *Proteus mirabilis*, or *Staphylococcus saprophyticus*. Occasionally, urinary-tract infections can also be caused by *Citrobacter* species, *Serratia marcescens*, *Pseudomonas* species, *Klebsiella aerogenes*, or *Staphylococcus epidermidis*.

The most common urinary-tract infection symptoms in children younger than 3 months are fever, vomiting, lethargy, and irritability. Children older than 3 months usually present with fever with urinary frequency or dysuria.

Lower urinary-tract infections are associated with inflammation of the bladder (cystitis) and urethra (urethritis), whereas upper urinary-tract infections are associated with inflammation of the renal pelvis and the kidneys (pyelonephritis). Urinary-tract infections are considered recurrent after at least two episodes of acute pyelonephritis, three episodes of cystitis or one episode of acute pyelonephritis plus one or more episodes of cystitis.

Urinary-tract infections are more common in girls than boys. The risk of contracting a urinary-tract infection is greater in children with functional and structural abnormalities that may cause urinary retention (e.g. vesicoureteric reflux, genital malformation, dysfunctional elimination syndrome, or constipation). Acute pyelonephritis, especially in children with vesicoureteric reflux, may lead to renal scarring and hypertension.

#### Aims of treatment

The aim of treatment is to relieve symptoms, prevent systemic infection, and to reduce the risk of complications.

#### Treatment

Urinary-tract infections require prompt antibacterial treatment to minimise the risk of complications including renal scarring, hypertension and renal failure.

**[EvGr]** Initial treatment for symptomatic bacteriuria should not be delayed while waiting for urine culture results and the antibacterial used should reflect local bacterial sensitivity. Urine culture results will determine the subsequent choice of antibacterial therapy.

Children under 3 months of age with a suspected urinary-tract infection and all children with a high risk of serious illness should be referred urgently to paediatric specialist care.

Parenteral antibacterials should be used to treat urinary-tract infections in children under 1 month old who present with a fever or, children 1–3 months old who appear unwell or present with abnormal white blood cell counts. A third-generation cephalosporin (such as cefotaxime p. 330 or ceftriaxone p. 332) should be given in combination with an