NAME OF MEDICINE
BRICANYL TURBUHALER
terbutaline sulphate 250 µg/dose.

PRESENTATION
TURBUHALER 250 µg/dose - white to off-white, rounded granules, which disintegrate to a fine powder upon slight pressure, filled into a specially designed inhaler made of plastic materials. The colour of the turning grip is light blue. Contains 200 actuations. Each actuation releases 250 µg terbutaline sulphate. On the bottom of the turning grip, a Braille code for identification of terbutaline is embossed.

INDICATIONS
Relief of bronchospasm occurring in bronchial asthma, bronchitis and other bronchopulmonary conditions where bronchospasm is a complicating factor.

Acute prophylaxis in situations known to induce bronchospasm, e.g. exercise-induced asthma.

DOSAGE AND ADMINISTRATION
If long term use of terbutaline is proposed, particularly if the patient is asked to take terbutaline in conjunction with other medications, objective pulmonary function testing (for example, by peak flow meter or spirometer) may be useful as part of assessment of the efficacy of treatment.

BRICANYL TURBUHALER is inspiratory flow driven and hence there is no need to co-ordinate the release of the dose and the inhalation as with a pressurised inhaler. When inhaling, the substance follows the inspired air into the airways. Treatment with BRICANYL TURBUHALER is effective even during an acute asthmatic attack.

The dosage of inhaled terbutaline via BRICANYL TURBUHALER should be individualised. BRICANYL TURBUHALER should be used as required rather than regularly.

Adults and children over 12 years: 250-500 µg as required. In severe cases the single dose may be increased to 1.5 mg. The total dose should not exceed 6 mg in 24 hours.

Children (3-12 years): 250-500 µg as required. In severe cases the single dose may be increased to 1.0 mg. The total dose should not exceed 4 mg in 24 hours.

When prescribing BRICANYL TURBUHALER to young children it is necessary to ascertain that they can follow the instructions for use.
INSTRUCTION FOR THE CORRECT USE OF TURBUHALER

TURBUHALER is inspiratory flow-driven which means that, when the patient inhales through the mouthpiece, the substance will follow the inspired air into the airways.

Note: It is important to instruct the patient
• to carefully read the instructions for use in the information leaflet which is packed with each inhaler
• to breathe in forcefully and deeply through the mouthpiece to ensure that an optimal dose is delivered to the lungs
• never to breathe out through the mouthpiece.

The patient may not taste or feel any medication when using TURBUHALER due to the small amount of drug dispensed.

CONTRAINDICATIONS

Hypersensitivity to sympathomimetic amines.

WARNINGS AND PRECAUTIONS

If a previously effective dosage regimen no longer gives the same symptomatic relief, the patient should seek medical advice as soon as possible as this could be the sign of worsening asthma. Repeated inhalations of beta2-agonists must then not delay reassessment of the asthma therapy.

As for all beta2-agonists caution should be observed in patients with thyrotoxicosis and in patients with severe cardiovascular disorders, such as ischaemic heart disease, tachyarrhythmias or severe heart failure.

Due to the hyperglycaemic effects of beta2-agonists, additional blood glucose controls are recommended initially in diabetic patients.

Potentially serious hypokalaemia may result from beta2-agonist therapy. Particular caution is recommended in acute severe asthma as the associated risk may be augmented by hypoxia. The hypokalaemic effect may be potentiated by concomitant treatments (see Interactions). It is recommended that serum potassium levels are monitored in such situations.

BRICANYL should be used with caution if susceptibility to sympathomimetic amines is likely to be increased, for instance in patients with hyperthyroidism not yet under adequate control.

EFFECT ON ABILITY TO DRIVE AND USE MACHINES

BRICANYL TURBUHALER does not affect the ability to drive or use machines.

PREGNANCY AND LACTATION

No teratogenic effects have been observed in patients or in animals. However, caution is recommended during the first trimester of pregnancy.

Although terbutaline is secreted into breast milk, and milk concentrations are approximately those in maternal plasma, two individual case studies indicate that the
infant is likely to receive 0.2 - 0.7% of the maternal dose (0.4 and 0.7 µg/kg/day respectively), depending (for example) on the time of feeding in relation to administration of the medicine. In the 4 infant studies this did not result in any signs of beta-adrenoceptor stimulation.

Transient hypoglycaemia has been reported in newborn preterm infants after maternal beta2-agonist treatment.

**ADVERSE EFFECTS**

The frequency of adverse reactions is low at the recommended dose. Terbutaline given by inhalation is unlikely to produce significant systemic effects when given in recommended doses because pharmacologically active concentrations of the drug are not achieved in the systemic circulation.

**MORE COMMON REACTIONS**

More commonly observed side effects include tremor and headache. Commonly observed side effects include, nervousness, tachycardia, palpitations, tonic muscle cramps and hypokalaemia. The majority of these effects reverse spontaneously within the first 1-2 weeks of treatment.

**LESS COMMON REACTIONS**

<table>
<thead>
<tr>
<th>Cardiovascular:</th>
<th>Ectopic beats.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastrointestinal:</td>
<td>Vomiting, bad taste, diarrhoea.</td>
</tr>
<tr>
<td>General:</td>
<td>Sweating.</td>
</tr>
<tr>
<td>Musculo-skeletal:</td>
<td>Muscle twitching.</td>
</tr>
<tr>
<td>Nervous system:</td>
<td>Drowsiness, dizziness, sleep disturbances and behavioural disturbances such as agitation, hyperactivity and restlessness.</td>
</tr>
<tr>
<td>Dermatological:</td>
<td>Urticaria and exanthema may occur.</td>
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</tbody>
</table>

**SERIOUS OR LIFE THREATENING REACTIONS**

Cardiac arrhythmias, (e.g. atrial fibrillation, supraventricular tachycardia and extrasystoles) and myocardial ischaemia have been rarely reported.

Overdose of terbutaline may produce significant tachycardia, arrhythmia and hypotension (see OVERDOSAGE). In rare cases, through unknown mechanisms, medicines for inhalation may cause bronchospasm.

**INTERACTIONS**

Beta-receptor blocking agents (including eye-drops), especially those which are non-selective, may partly or totally inhibit the effect of beta-agonists.
HALOGENATED ANAESTHETICS
Halothane anaesthesia should be avoided during beta2-agonist treatment, since it increases the risk of cardiac arrhythmias. Other halogenated anaesthetics should be used cautiously together with beta2-agonists.

POTASSIUM DEPLETING AGENTS AND HYPOKALAEMIA
Owing to the hypokalaemic effect of beta-agonists, concurrent administration with BRICANYL of serum potassium depleting agents known to exacerbate the risk of hypokalaemia, such as diuretics, methyl xanthines and corticosteroids, should be administered cautiously after careful evaluation of the benefits and risks with special regard to the increased risk of cardiac arrhythmias arising as a result of hypokalaemia (see WARNINGS AND PRECAUTIONS). Hypokalaemia also predisposes to digoxin toxicity.

OVERDOSAGE
There is a potential for progressive accumulation of dry powder in the mouthpiece of BRICANYL TURBUHALER that could be released if dropped (for example, from a table) towards the end of the inhaler life. To minimize unnecessary systemic exposure to terbutaline, the patient should be advised, when possible, to rinse their mouth after each use.

Possible symptoms and signs: headache, anxiety, tremor, nausea, insomnia, tonic muscle cramps, palpitations, tachycardia and cardiac arrhythmias. A fall in blood pressure sometimes occurs.

Laboratory findings: Hyperglycaemia and lactacidosis sometimes occur. Beta2-agonists may cause hypokalaemia as a result of redistribution of potassium.

TREATMENT OF OVERDOSAGE
Usually no treatment is required. If it is suspected that significant amounts of terbutaline sulphate have been swallowed, the following measures should be considered:

Gastric lavage, activated charcoal. Determine acid-base balance, blood glucose and electrolytes. Monitor heart rate and rhythm and blood pressure. The preferred antidote for overdosage with BRICANYL is a cardioselective beta-receptor blocking agent, but beta-receptor blocking medicines should be used with caution in patients with a history of bronchospasm. If the beta2-mediated reduction in peripheral vascular resistance significantly contributes to the fall in blood pressure, a volume expander should be given.

PHARMACOLOGICAL PROPERTIES

PHARMACODYNAMIC PROPERTIES
Terbutaline is an adrenergic agonist which predominantly stimulates beta2-receptors, thus producing relaxation of bronchial smooth muscle, inhibition of the release of endogenous spasmogens, inhibition of oedema caused by endogenous mediators and increased mucociliary clearance.
The bronchospasmolytic effect (time to onset, time to maximum effect and duration) and the extent of metabolism are dependent on the route of administration of terbutaline. The time to maximum effect is 30-60 minutes following inhalation.

Inhaled terbutaline acts within a few minutes and has a duration of up to 6 hours.

**PHARMACOKINETICS PROPERTIES**

Terbutaline is delivered to the prime site of action in the lungs by TURBUHALER administration.

About 20-30% of the metered dose is deposited in the lungs at a normal inhalation flow rate.

Terbutaline is metabolised mainly by conjugation with sulphuric acid and excreted as the sulphate conjugate.

No active metabolites are formed. Inhaled terbutaline is absorbed unchanged from the respiratory tract.

The presence of the two phenolic hydroxyl groups in the meta-positions confers resistance to metabolism by the enzyme catechol-o-methyl transferase.

In normal adult men and women, the terminal elimination phase has a half-life of around 15 hours.

After administration by inhalation between 2-37% of the delivered terbutaline was recovered in faeces and 3-35% in urine.

Excretion of terbutaline sulphate and its metabolites is essentially complete within 72-96 hours after a single parenteral or oral dose.

As terbutaline is largely excreted in urine, caution should be exercised in patients with renal impairment.

No dosage adjustments are required in the elderly provided hepatic and renal function are normal.

**PHARMACEUTICAL PRECAUTIONS**

**STORAGE CONDITIONS**

BRICANYL TURBUHALER should be stored a temperatures not exceeding 30°C, with the cover on.

**SHELF-LIFE**

24 months.

**CONTAINER**

BRICANYL TURBUHALER is a multidose, inspiratory flow-driven, metered dose powder inhaler. The device is made of plastic parts.
MEDICINE CLASSIFICATION
Prescription Medicine

PACKAGE QUANTITIES
250 µg/dose, 200 doses

FURTHER INFORMATION
Chemical name: 1-(3,5-Dihydroxyphenyl)-2-t-butylaminoethanol sulphate.

BRICANYL TURBUHALER contains only the active substance terbutaline sulphate and is free from propellants, lubricants, preservatives, carrier substances or other additives.

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