SUMMARY OF PRODUCT CHARACTERISTICS, LABELLING AND PACKAGE LEAFLET

Version: 27 November 2018
This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions. See section 4.8 for how to report adverse reactions.

1. NAME OF THE MEDICINAL PRODUCT

Spiolto Respimat 2.5 microgram/2.5 microgram, inhalation solution

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

The delivered dose is 2.5 microgram tiotropium (as bromide monohydrate) and 2.5 microgram olodaterol (as hydrochloride) per puff.

The delivered dose is the dose which is available for the patient after passing the mouthpiece.

Excipient with known effect: This medicine contains 0.0011 mg benzalkonium chloride in each actuation.
For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Inhalation solution
Clear, colourless, inhalation solution

4. CLINICAL PARTICULARS

4.1 Therapeutic indications

Spiolto Respimat is indicated as a maintenance bronchodilator treatment to relieve symptoms in adult patients with chronic obstructive pulmonary disease (COPD).

4.2 Posology and method of administration

Posology
The medicinal product is intended for inhalation use only. The cartridge can only be inserted and used in the Respimat inhaler.

Two puffs from the Respimat inhaler comprise one medicinal dose.

Adults
The recommended dose is 5 microgram tiotropium and 5 microgram olodaterol given as two puffs from the Respimat inhaler once daily, at the same time of the day.

The recommended dose should not be exceeded.

Elderly population
Elderly patients can use Spiolto Respimat at the recommended dose.

Hepatic impairment and Renal impairment
Spiolto Respimat contains tiotropium which is a predominantly renally excreted drug and olodaterol, which is predominantly metabolized in the liver.
**Hepatic impairment**
Patients with mild and moderate hepatic impairment can use Spiolto Respimat at the recommended dose.

There are no data available for use of olodaterol in patients with severe hepatic impairment.

**Renal impairment**
Renally impaired patients can use Spiolto Respimat at the recommended dose.
For patients with moderate to severe impairment (creatinine clearance \( \leq 50 \text{ ml/min} \)) see 4.4 and 5.2.

Spiolto Respimat contains olodaterol. There is limited experience with the use of olodaterol in patients with severe renal impairment.

**Paediatric population**
There is no relevant use of Spiolto Respimat in the paediatric population (under 18 years).

**Method of administration**
To ensure proper administration of the medicinal product, the patient should be shown how to use the inhaler by a physician or other health care professionals.
SPIOLTO® RESPIMAT®

Instructions For Use

Introduction

Read these Instructions for Use before you start using Spiolto Respimat re-usable.

The patient will need to use this inhaler only ONCE A DAY. Each time used take TWO PUFFS.

- If not been used for more than 7 days release one puff towards the ground.
- If not been used for more than 21 days repeat steps 4 to 6 under ‘Prepare for use’ until a cloud is visible. Then repeat steps 4 to 6 three more times.

How to care for Spiolto Respimat re-usable

Clean the mouthpiece including the metal part inside the mouthpiece with a damp cloth or tissue only, at least once a week.
Any minor discoloration in the mouthpiece does not affect Spiolto Respimat re-usable inhaler performance.
If necessary, wipe the outside of Spiolto Respimat re-usable inhaler with a damp cloth.

When to replace the inhaler

When the patient has used an inhaler with 6 cartridges, get a new Spiolto Respimat re-usable pack containing an inhaler.
## Prepare for use

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
</table>
| **1. Remove clear base** | ![Image](image1.png)  
  - Keep the cap closed.  
  - Press the safety catch while pulling off the clear base with the other hand. |
| **2. Insert cartridge** | ![Image](image2.png)  
  - Insert the cartridge into the inhaler.  
  - Place the inhaler on a firm surface and push down firmly until it clicks into place. |
| **3. Track cartridge** | ![Image](image3.png)  
  - Mark the check-box on inhaler’s label to track the number of cartridges.  
  - Put the clear base back into place until it clicks. |
4. **Turn**
   - Keep the cap closed.
   - Turn the clear base in the direction of the arrows on the label until it clicks (half a turn).

5. **Open**
   - Open the cap until it snaps fully open.

6. **Press**
   - Point the inhaler toward the ground.
   - Press the dose-release button.
   - Close the cap.
   - Repeat steps 4-6 until a cloud is visible.
   - **After a cloud is visible**, repeat steps 4-6 three more times.
The inhaler is now ready to use and will deliver 60 puffs (30 doses).
Daily use

**TURN**
- Keep the cap closed.
- TURN the clear base in the direction of the arrows on the label until it clicks (half a turn).

**OPEN**
- OPEN the cap until it snaps fully open.

**PRESS**
- Breathe out slowly and fully.
- Close the lips around the mouthpiece without covering the air vents. Point the Inhaler to the back of the throat.
- While taking a slow, deep breath through the mouth, PRESS the dose-release button and continue to breathe in slowly for as long as comfortable.
- Hold the breath for 10 seconds or for as long as comfortable.
- Repeat TURN, OPEN, PRESS for a total of 2 puffs.
- Close the cap until the inhaler is used again.

When to replace the Spiolto Respimat cartridge

The dose indicator shows how many puffs remain in the cartridge.

- **60 puffs remaining.**
- Less than 10 puffs remaining. Obtain a new cartridge.
The cartridge is used up. Turn the clear base to loosen it. The inhaler is now in a locked position. Pull off the cartridge from the inhaler. Insert a new cartridge (continue with step 2).
4.3 Contraindications

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

History of hypersensitivity to atropine or its derivatives, e.g. ipratropium or oxtropium.

4.4 Special warnings and precautions for use

Asthma
Spiolto Respimat should not be used in asthma. The efficacy and safety of Spiolto Respimat in asthma have not been studied.

Not for acute use
Spiolto Respimat is not indicated for the treatment of acute episodes of bronchospasm, i.e. as rescue therapy.

Paradoxical bronchospasm
As with other inhaled medicines Spiolto Respimat may result in paradoxical bronchospasm that may be life-threatening. If paradoxical bronchospasm occurs Spiolto Respimat should be discontinued immediately and alternative therapy substituted.

Anticholinergic effects related to tiotropium

Narrow-angle glaucoma, prostatic hyperplasia or bladder-neck obstruction
Consistent with the anticholinergic activity of tiotropium, Spiolto Respimat should be used with caution in patients with narrow-angle glaucoma, prostatic hyperplasia or bladder-neck obstruction.

Eye symptoms
Patients should be cautioned to avoid getting the spray into their eyes. They should be advised that this may result in precipitation or worsening of narrow-angle glaucoma, eye pain or discomfort, temporary blurring of vision, visual halos or coloured images in association with red eyes from conjunctival congestion and corneal oedema. Should any combination of these eye symptoms develop, patients should stop using Spiolto Respimat and consult a specialist immediately.

Dental caries
Dry mouth, which has been observed with anti-cholinergic treatment, may in the long term be associated with dental caries.

Patients with renal impairment
As plasma concentration of tiotropium increases with decreased renal function in patients with moderate to severe renal impairment (creatinine clearance ≤ 50 ml/min) Spiolto Respimat should be used only if the expected benefit outweighs the potential risk. There is no long term experience in patients with severe renal impairment (see 5.2).

Cardiovascular effects
The experience with Spiolto Respimat is limited in patients with a history of myocardial infarction during the previous year, unstable or life-threatening cardiac arrhythmia, hospitalized for heart failure during the previous year or with a diagnosis of paroxysmal tachycardia (>100 beats per minute)
because these patients were excluded from the clinical trials. Spiolto Respimat should be used with caution in these patient groups.

Like other beta₂-adrenergic agonists, olodaterol may produce a clinically significant cardiovascular effect in some patients as measured by increases in pulse rate, blood pressure, and/or symptoms. In case such effects occur, treatment may need to be discontinued. In addition, beta-adrenergic agonists have been reported to produce electrocardiogram (ECG) changes, such as flattening of the T wave and ST segment depression, although the clinical significance of these observations is unknown.

Long acting beta₂-adrenergic agonists should be administered with caution in patients with cardiovascular disorders, especially ischaemic heart disease, severe cardiac decompensation, cardiac arrhythmias, hypertrophic obstructive cardiomyopathy, hypertension, and aneurysm, in patients with convulsive disorders or thyrotoxicosis, in patients with known or suspected prolongation of the QT interval (e.g. QT > 0.44 s), and in patients who are unusually responsive to sympathomimetic amines.

Hypokalaemia
Beta₂-adrenergic agonists may produce significant hypokalaemia in some patients, which has the potential to produce adverse cardiovascular effects. The decrease in serum potassium is usually transient, not requiring supplementation. In patients with severe COPD, hypokalaemia may be potentiated by hypoxia and concomitant treatment (see section 4.5), which may increase the susceptibility to cardiac arrhythmias.

Hyperglycaemia
Inhalation of high doses of beta₂-adrenergic agonists may produce increases in plasma glucose.

Anaesthesia
Caution needs to be taken in case of a planned operation with halogenated hydrocarbon anaesthetics due to an increased susceptibility to the adverse cardiac effects of beta agonist bronchodilators.

Spiolto Respimat should not be used in conjunction with any other medications containing long-acting beta₂-adrenergic agonists.
Patients who have been taking inhaled, short-acting beta₂-adrenergic agonists on a regular basis (e.g. four times a day) should be instructed to use them only for symptomatic relief of acute respiratory symptoms.

Spiolto Respimat should not be used more frequently than once daily.

Hypersensitivity
As with all medications, immediate hypersensitivity reactions may occur after administration of Spiolto Respimat.

Excipients
Benzalkonium chloride may cause wheezing and breathing difficulties. Patients with asthma are at an increased risk for these adverse events.

4.5 Interaction with other medicinal products and other forms of interaction

Although no formal in vivo drug interaction studies have been performed between Spiolto Respimat and other drugs, inhaled Spiolto Respimat has been used concomitantly with other COPD medicinal products, including short acting sympathomimetic bronchodilators and inhaled corticosteroids without clinical evidence of drug interactions.

Anticholinergic agents
The co-administration of tiotropium bromide, one component of Spiolto Respimat, with other anticholinergic containing drugs has not been studied and therefore is not recommended.

**Adrenergic agents**
Concomitant administration of other adrenergic agents (alone or as part of combination therapy) may potentiate the undesirable effects of Spiolto Respimat.

**Xanthine derivatives, steroids or diuretics**
Concomitant treatment with xanthine derivatives, steroids, or non-potassium sparing diuretics may potentiate any hypokalemic effect of adrenergic agonists (see section 4.4).

**Beta-blockers**
Beta-adrenergic blockers may weaken or antagonise the effect of olodaterol. Cardioselective beta-blockers could be considered, although they should be administered with caution.

**MAO inhibitors and tricyclic antidepressants, QTc Prolonging drugs**
Monamine oxidase inhibitors or tricyclic antidepressants or other drugs known to prolong the QTc interval may potentiate the action of Spiolto Respimat on the cardiovascular system.

**Pharmacokinetic Drug Drug interactions**
No relevant effect on systemic exposure to olodaterol has been observed in drug-drug interaction studies with co-administration of fluconazole, used as model inhibitor of CYP2C9.

Co-administration of ketoconazole as potent P-gp and CYP3A4 inhibitor increased systemic exposure to olodaterol by approximately 70%. No dose adjustment of Spiolto Respimat is necessary.

*In vitro* investigations have shown that olodaterol does not inhibit CYP enzymes or drug transporters at the plasma concentrations achieved in clinical practice.

**4.6 Fertility, pregnancy and lactation**

**Pregnancy**

**Tiotropium**
There is a very limited amount of data from the use of tiotropium in pregnant women. Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity at clinically relevant doses (see 5.3).

**Olodaterol**
For olodaterol no clinical data on exposed pregnancies are available. Preclinical data for olodaterol revealed effects typical for beta-adrenergic agonists at high multiples of the therapeutic doses (see section 5.3).

As a precautionary measure, it is preferable to avoid the use of Spiolto Respimat during pregnancy.

Like other beta2-adrenergic agonists, olodaterol a component of Spiolto Respimat may inhibit labour due to a relaxant effect on uterine smooth muscle.

**Breast-feeding**
Clinical data from nursing women exposed to tiotropium and/or olodaterol are not available.

In animal studies for both tiotropium and olodaterol the substances and/or their metabolites have been detected in the milk of lactating rats, but it is not known whether tiotropium and/or olodaterol passes into human breast milk.
A decision on whether to continue/discontinue breast-feeding or to continue/discontinue therapy with Spiolto Respimat should be made taking into account the benefit of breast-feeding to the child and the benefit of Spiolto Respimat therapy to the woman.

Fertility
Clinical data on fertility are not available for tiotropium and olodaterol or the combination of both components. Preclinical studies performed with the individual components tiotropium and olodaterol showed no indication of any adverse effect on fertility (see 5.3).

4.7 Effects on ability to drive and use machines

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

However, patients should be advised that dizziness and blurred vision have been reported with the use of Spiolto Respimat. Therefore, caution should be recommended when driving a car or operating machinery. If patients experience such symptoms, they should avoid potentially hazardous tasks such as driving or operating machinery.

4.8 Undesirable effects

a. Summary of the safety profile

Many of the listed undesirable effects can be assigned to the anticholinergic properties of tiotropium bromide or to the β₂-adrenergic properties of olodaterol, the components of Spiolto Respimat

b. Tabulated summary of adverse reactions

The frequencies assigned to the undesirable effects listed below are based on the crude incidence rates of adverse drug reactions (i.e. events attributed to Spiolto Respimat) observed in the tiotropium 5 microgram/olodaterol 5 microgram dose group (5646 patients), pooled from 8 active or placebo-controlled, parallel group clinical trials in COPD patients with treatment periods ranging between 4 and 52 weeks.

Adverse reactions reported in all clinical trials with Spiolto Respimat are shown below according to system organ class. These also include all adverse reactions previously reported with one of the individual components.

Frequency is defined using the following convention:

Very common (≥1/10); common (≥1/100 to <1/10); uncommon (≥1/1,000 to <1/100); rare (≥1/10,000 to <1/1,000); very rare (<1/10,000), not known (cannot be estimated from the available data)

<table>
<thead>
<tr>
<th>System Organ Class</th>
<th>Adverse reaction</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infections and infestations</td>
<td>Nasopharyngitis</td>
<td>not known</td>
</tr>
<tr>
<td>Metabolism and nutrition disorders</td>
<td>Dehydration</td>
<td>not known</td>
</tr>
<tr>
<td>Nervous system disorders</td>
<td>Dizziness</td>
<td>uncommon</td>
</tr>
<tr>
<td>Category</td>
<td>Condition</td>
<td>Frequency</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Insomnia</td>
<td>rare</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>uncommon</td>
<td></td>
</tr>
<tr>
<td><strong>Eye disorders</strong></td>
<td>Vision blurred</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Glaucoma</td>
<td>not known</td>
</tr>
<tr>
<td></td>
<td>Intraocular pressure increased</td>
<td>not known</td>
</tr>
<tr>
<td><strong>Cardiac disorders</strong></td>
<td>Atrial fibrillation</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Tachycardia</td>
<td>uncommon</td>
</tr>
<tr>
<td></td>
<td>Palpitations</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Supraventricular tachycardia</td>
<td>rare</td>
</tr>
<tr>
<td><strong>Vascular disorders</strong></td>
<td>Hypertension</td>
<td>rare</td>
</tr>
<tr>
<td><strong>Respiratory, thoracic and mediastinal disorders</strong></td>
<td>Cough</td>
<td>uncommon</td>
</tr>
<tr>
<td></td>
<td>Dysphonia</td>
<td>uncommon</td>
</tr>
<tr>
<td></td>
<td>Laryngitis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Pharyngitis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Epistaxis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Bronchospasm</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Sinusitis</td>
<td>not known</td>
</tr>
<tr>
<td><strong>Gastrointestinal disorders</strong></td>
<td>Dry mouth</td>
<td>uncommon</td>
</tr>
<tr>
<td></td>
<td>Constipation</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Oropharyngeal candidiasis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Gingivitis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Intestinal obstruction</td>
<td>not known</td>
</tr>
<tr>
<td></td>
<td>Ileus paralytic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dysphagia</td>
<td>not known</td>
</tr>
<tr>
<td></td>
<td>Gastrooesophageal reflux disease</td>
<td>not known</td>
</tr>
<tr>
<td></td>
<td>Glossitis</td>
<td>not known</td>
</tr>
<tr>
<td></td>
<td>Stomatitis</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Dental caries</td>
<td>not known</td>
</tr>
<tr>
<td><strong>Skin and subcutaneous tissue disorders, Immune system disorders</strong></td>
<td>Hypersensitivity</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Angioedema</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Urticaria</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Pruritus</td>
<td>rare</td>
</tr>
<tr>
<td></td>
<td>Anaphylactic reaction</td>
<td>not known</td>
</tr>
<tr>
<td>Rash</td>
<td>rare</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Skin infection and skin ulcer</td>
<td>not known</td>
<td></td>
</tr>
<tr>
<td>Dry skin</td>
<td>not known</td>
<td></td>
</tr>
</tbody>
</table>

### Musculoskeletal and connective tissue disorders

<table>
<thead>
<tr>
<th>Arthralgia</th>
<th>rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back pain¹</td>
<td>rare</td>
</tr>
<tr>
<td>Joint swelling</td>
<td>rare</td>
</tr>
</tbody>
</table>

### Renal and urinary disorders

<table>
<thead>
<tr>
<th>Urinary retention</th>
<th>rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urinary tract infection</td>
<td>rare</td>
</tr>
<tr>
<td>Dysuria</td>
<td>rare</td>
</tr>
</tbody>
</table>

¹ undesirable effects reported with Spioltro Respimat, but not with the individual components

### c. Description of selected adverse reactions

Spioltro Respimat combines anticholinergic and β₂-adrenergic properties due to its components tiotropium and olodaterol.

**Anticholinergic adverse reaction profile**

In the long term 52-weeks clinical trials with Spioltro Respimat, the most frequently observed undesirable anticholinergic effect was dry mouth which occurred in approximately 1.3% of patients treated with Spioltro Respimat and in 1.7% and 1% in the tiotropium 5 microgram and olodaterol 5 microgram arms, respectively. Dry mouth led to discontinuation in 2 of 4,968 patients (0.04%) treated with Spioltro Respimat.

Serious undesirable effects consistent with anticholinergic effects include glaucoma, constipation, intestinal obstruction including ileus paralytic and urinary retention.

**β-adrenergic adverse reaction profile**

Olodaterol, one component of Spioltro Respimat is a member of the therapeutic class of long-acting beta₂-adrenergic agonists. Therefore the occurrence of other undesirable effects related to the beta-adrenergic agonist class, which are not listed above, should be taken into consideration, such as, arrhythmia, myocardial ischaemia, angina pectoris, hypotension, tremor, nervousness, muscle spasms, fatigue, malaise, hypokalemia, hyperglycemia, and metabolic acidosis.

### d. Other special populations

An increase in anticholinergic effect may occur with increasing age.

### 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 national reporting system listed in Appendix V*.

### 4.9 Overdose

There is limited information on overdosing with Spioltro Respimat. Spioltro Respimat has been studied up to 5 microgram / 10 microgram (tiotropium/olodaterol) in COPD patients and up to 10 microgram / 40 microgram (tiotropium/olodaterol) in healthy subjects; no clinically relevant effects were observed. An
overdose could lead to exaggerated anti-muscarinic effects of tiotropium and/or exaggerated β₂ agonists effects of olodaterol.

Symptoms

**Overdose of anticholinergic tiotropium**

High doses of tiotropium may lead to anticholinergic signs and symptoms.

However, there were no systemic anticholinergic adverse effects following a single inhaled dose of up to 340 microgram tiotropium bromide in healthy volunteers. Additionally, no relevant adverse events, beyond dry mouth/throat and dry nasal mucosa were observed following 14-day dosing of up to 40 microgram tiotropium inhalation solution in healthy volunteers with the exception of pronounced reduction in salivary flow from day 7 onwards.

**Overdose of β₂-agonist olodaterol**

An overdose of olodaterol is likely to lead to exaggerated effects typical of beta₂-adrenergic agonists, e.g. myocardial ischaemia, hypertension or hypotension, tachycardia, arrhythmias, palpitation, dizziness, nervousness, insomnia, anxiety, headache, tremor, dry mouth, muscle spasms, nausea, fatigue, malaise, hypokalemia, hyperglycemia, and metabolic acidosis.

Treatment of overdose

Treatment with Spiolto Respimat should be discontinued. Supportive and symptomatic treatment is indicated. Serious cases should be hospitalised. Use of cardioselective beta-blockers may be considered, but only subject to extreme caution since the use of beta-adrenergic blocker medication may provoke bronchospasm.

5. **PHARMACOLOGICAL PROPERTIES**

5.1 **Pharmacodynamic properties**

Pharmacotherapeutic group:

Drugs for obstructive airway diseases, adrenergics in combination with anticholinergics

ATC code: R03AL06

**Mechanism of action**

**Spiolto Respimat**

Spiolto Respimat is a fixed dose combination inhalation solution containing a long acting muscarinic receptor antagonist, tiotropium and a long acting beta₂-adrenergic agonist, olodaterol (LAMA/LABA) which is delivered via the Spiolto Respimat soft mist inhaler device.

The two active ingredients provide additive bronchodilation due to their different mode of action. Since muscarinic receptors appear to be more prominent in the central airways while β₂ adrenoceptors have a higher expression level in the peripheral airways, a combination of tiotropium and olodaterol should provide optimal bronchodilatation in all regions of the lungs.

**Tiotropium**

Tiotropium bromide is a long-acting, specific antagonist at muscarinic receptors. It has similar affinity to the subtypes, M₁ to M₅. In the airways, tiotropium bromide competitively and reversibly binds to the M₃ receptors in the bronchial smooth musculature, antagonising the cholinergic (bronchoconstrictive) effects of acetylcholine, resulting in bronchial smooth muscle relaxation. The effect was dose dependent and lasted longer than 24h. As an N-quaternary anticholinergic, tiotropium bromide is topically (broncho-) selective when administered by inhalation, demonstrating an acceptable therapeutic range before systemic anticholinergic effects may occur.

**Olodaterol**

Olodaterol has a high affinity and high selectivity to the human beta₂-adrenoceptor.
In vitro studies have shown that olodaterol has 241-fold greater agonist activity at beta_{2}-adrenoceptors compared to beta_{1}-adrenoceptors and 2299-fold greater agonist activity compared to beta_{3}-adrenoceptors.

The compound exerts its pharmacological effects by binding and activation of beta_{2}-adrenoceptors after topical administration by inhalation.

Activation of these receptors in the airways results in a stimulation of intracellular adenyl cyclase, an enzyme that mediates the synthesis of cyclic-3',5' adenosine monophosphate (cAMP). Elevated levels of cAMP induce bronchodilation by relaxation of airway smooth muscle cells. Olodaterol has the pre-clinical profile of a long-acting selective beta_{2}-adrenoceptor agonist (LABA) with a fast onset of action and a duration of action of at least 24 hours.

Beta-adrenoceptors are divided into three subtypes, beta_{1}-adrenoceptors predominantly expressed on cardiac muscle, beta_{2}-adrenoceptors predominantly expressed on airway smooth muscle and beta_{3}-adrenoceptors predominantly expressed on adipose tissue. Beta_{2}-agonists cause bronchodilation. Although the beta_{2}-adrenoceptor is the predominant adrenergic receptor in the airway smooth muscle it is also present on the surface of a variety of other cells, including lung epithelial and endothelial cells and in the heart. The precise function of beta_{2}-receptors in the heart is not known, but their presence raises the possibility that even highly selective beta_{2}-adrenergic agonists may have cardiac effects.

**Effects on cardiac electrophysiology**

**Tiotropium**

In a dedicated QT study involving 53 healthy volunteers, tiotropium inhalation powder 18 microgram and 54 microgram (i.e. three times the therapeutic dose) over 12 days did not significantly prolong QT intervals of the ECG.

**Olodaterol**

The effect of olodaterol on the QT/QTc interval of the ECG was investigated in 24 healthy male and female volunteers in a double-blind, randomised, placebo- and active (moxifloxacin) controlled study. Olodaterol at single doses of 10, 20, 30 and 50 microgram, demonstrated that compared with placebo, the mean changes from baseline in QT interval over 20 minutes to 2 hours after dosing increased dose-dependently from 1.6 (10 microgram olodaterol) to 6.5 ms (50 microgram olodaterol), with the upper limit of the two-sided 90% confidence intervals being less than 10 ms at all dose levels for individually corrected QT (QTcI).

The effect of 5 microgram and 10 microgram olodaterol on heart rate and rhythm was assessed using continuous 24-hour ECG recording (Holter monitoring) in a subset of 772 patients in the 48-week, placebo-controlled Phase 3 trials. There were no dose- or time-related trends or patterns observed for the magnitudes of mean changes in heart rate or premature beats. Shifts from baseline to the end of treatment in premature beats did not indicate meaningful differences between olodaterol 5 microgram, 10 microgram and placebo.

**Spiolto Respimat**

Two 52-week randomized, double-blind trials using Spiolto Respimat enrolled 5162 patients with COPD. In a pooled analysis the number of subjects with changes from baseline-corrected QTcF (Fridericia correction) interval of >30 msec at 40 minutes post-dose on day 85, 169, and 365, ranged from 3.1%, 4.7%, and 3.6% for the Spiolto Respimat group compared to 4.1%, 4.4%, and 3.6% for olodaterol 5 microgram and 3.4%, 2.3%, and 4.6% for the tiotropium 5 microgram group, respectively.

**Clinical efficacy and safety**

The Phase III clinical development program for Spiolto Respimat included three randomised, double-blind trials:

(i) two replicate, 52 week parallel group trials comparing Spiolto Respimat with tiotropium 5 microgram and olodaterol 5 microgram (1029 received Spiolto Respimat) [Trials 1 and 2]
(ii) one 6 week cross-over trial comparing Spiolto Respimat with tiotropium 5 microgram and olodaterol 5 microgram and placebo (139 received Spiolto Respimat) [Trial 3]

In these trials, the comparator products, tiotropium 5 microgram, olodaterol 5 microgram and placebo were administered via the Respimat inhaler.

**Patient characteristics**

The majority of the 5162 patients recruited in the global, 52 week trials [Trials 1 and 2] were male (73%), white (71%) or Asian (25%), with a mean age of 64.0 years. Mean post-bronchodilator FEV₁ was 1.37 L (GOLD 2 [50%], GOLD 3 [39%], GOLD 4 [11%]). Mean β₂-agonist responsiveness was 16.6% of baseline (0.171 L). Pulmonary medications allowed as concomitant therapy included inhaled steroids [47%] and xanthines [10%].

The 6 week trial [Trial 3] was conducted in Europe and North America. The majority of the 219 recruited patients were male (59%) and white (99%), with a mean age of 61.1 years. Mean post-bronchodilator FEV₁ was 1.55 L (GOLD 2 [64%], GOLD 3 [34%], GOLD 4 [2%]). Mean β₂-agonist responsiveness was 15.9% of baseline (0.193 L). Pulmonary medications allowed as concomitant therapy included inhaled steroids [41%] and xanthines [4%].

**Effects on lung function**

In the 52 week trials, Spiolto Respimat administered once daily in the morning, provided clear improvement in lung function within 5 minutes after the first dose compared to tiotropium 5 microgram (mean increase in FEV₁ of 0.137 L for Spiolto Respimat vs. 0.058 L for tiotropium 5 microgram [p<0.0001] and 0.125 L for olodaterol 5 microgram [p=0.16]). In both studies, significant improvements were observed in FEV₁ AUC₀-₃h response and trough FEV₁ response after 24 weeks (lung function primary endpoints) for Spiolto Respimat compared to tiotropium 5 microgram and olodaterol 5 microgram (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>FEV₁ AUC₀-₃h response</th>
<th>Trough FEV₁ response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trial 1</td>
<td>Trial 2</td>
</tr>
<tr>
<td>Spiolto Respimat versus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiotropium 5 microgram</td>
<td>0.117 L</td>
<td>0.103 L</td>
</tr>
<tr>
<td>Olodaterol 5 microgram</td>
<td>0.123 L</td>
<td>0.132 L</td>
</tr>
</tbody>
</table>

pre-treatment baseline FEV₁: Trial 1 = 1.16 L; Trial 2 = 1.15 L

p<0.0001 for all comparisons

n= number of patients

Patients with a higher degree of reversibility at baseline generally exhibited a higher bronchodilator response with Spiolto Respimat than patients with a lower degree of reversibility at baseline.

The increased bronchodilator effects of Spiolto Respimat compared to tiotropium 5 microgram and olodaterol 5 microgram were maintained throughout the 52 week treatment period. Spiolto Respimat also improved morning and evening PEFR (peak expiratory flow rate) compared to tiotropium 5 microgram and olodaterol 5 microgram as measured by patient's daily recordings.
In the 6 week trial, Spiolto Respimat showed a significantly greater FEV₁ response compared to tiotropium 5 microgram, olodaterol 5 microgram and placebo (p<0.0001) over the full 24 hour dosing interval (Table 2).

Table 2  
Average difference in FEV₁ (L) over 3 hr, 12 hr and 24 hr and difference in trough FEV₁ (L) for Spiolto Respimat compared to tiotropium 5 microgram, olodaterol 5 microgram and placebo after 6 weeks (Trial 3)

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>3 hr average</th>
<th>n</th>
<th>12 hr average</th>
<th>24 hr average¹</th>
<th>Trough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiolto Respimat</td>
<td>138</td>
<td></td>
<td>138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiotropium 5 microgram</td>
<td>137</td>
<td>0.109</td>
<td>135</td>
<td>0.119</td>
<td>0.110</td>
<td>0.079</td>
</tr>
<tr>
<td>Olodaterol 5 microgram</td>
<td>138</td>
<td>0.109</td>
<td>136</td>
<td>0.126</td>
<td>0.115</td>
<td>0.092</td>
</tr>
<tr>
<td>Placebo</td>
<td>135</td>
<td>0.325</td>
<td>132</td>
<td>0.319</td>
<td>0.280</td>
<td>0.207</td>
</tr>
</tbody>
</table>

Pre-treatment baseline FEV₁ = 1.30 L  
¹ primary endpoint  
p=0.0001 for all comparisons  
n= number of patients

Dyspnea

After 24 weeks (Trials 1 and 2), mean TDI focal score was 1.98 units for Spiolto Respimat, with a significant improvement compared to tiotropium 5 microgram (mean difference 0.36, p=0.008) and olodaterol 5 microgram (mean difference 0.42 (p=0.002).

More patients treated with Spiolto Respimat had a clinically meaningful improvement in TDI focal score (MCID, defined as a value of at least 1 unit) compared to tiotropium 5 microgram (54.9% vs. 50.6%, p=0.0546) and olodaterol 5 microgram (54.9% vs. 48.2%, p=0.0026).

Rescue Medication Use

Patients treated with Spiolto Respimat used less daytime and nighttime rescue salbutamol compared to patients treated with tiotropium 5 microgram and olodaterol 5 microgram (mean daytime rescue use for Spiolto Respimat of 0.76 occasions per day compared to 0.97 occasions per day for tiotropium 5 microgram and 0.87 occasions per day for olodaterol 5 microgram, p<0.0001; mean nighttime rescue use for Spiolto Respimat of 1.24 occasions per day compared to 1.69 occasions per day for tiotropium 5 microgram and 1.52 occasions per day for olodaterol 5 microgram, p<0.0001, Trials 1 and 2).

Patient Global Rating

Patients treated with Spiolto Respimat perceived a greater improvement in their respiratory condition compared to tiotropium 5 microgram and olodaterol 5 microgram, as measured by a Patient’s Global Rating (PGR) scale (Trials 1 and 2).

Exacerbations

Tiotropium 5 microgram has previously demonstrated a statistically significant reduction in risk of a COPD exacerbation compared to placebo. COPD exacerbations was included as an additional endpoint in the 52 week pivotal trials (Trials 1 and 2). In the combined dataset, the proportion of patients experiencing at least one moderate/severe COPD exacerbation was 27.7% for Spiolto Respimat and 28.8% for tiotropium 5 microgram (p=0.39). These studies were not specifically designed to evaluate the effect of treatments on COPD exacerbations.
In a one-year, randomised, double-blind, active-controlled parallel group clinical trial (Trial 9) Spiolto Respimat was compared with tiotropium 5 microgram on COPD exacerbations. All respiratory medications except anticholinergics, long-acting beta-agonists and combinations thereof were allowed as concomitant treatment, i.e. rapidly acting beta-agonists, inhaled corticosteroids and xanthines. The primary endpoint was the annualised rate of moderate to severe COPD exacerbations (3939 patients received Spiolto Respimat and 3941 patients received tiotropium 5 microgram).

The majority of patients were male (71.4%) and Caucasian (79.3%). The mean age was 66.4 years, mean post-bronchodilator FEV1 was 1.187 L (SD 0.381), and 29.4% of patients had a history of clinically important cardiovascular disease.

Moderate-to-severe exacerbations of COPD were defined as “a complex of lower respiratory events/symptoms (increase or new onset) related to the underlying COPD, with duration of three days or more, requiring a prescription of antibiotics and/or systemic steroids and/or hospitalisation”.

Spiolto Respimat treatment resulted in a 7% reduction in the annualised rate of moderate to severe COPD exacerbation in comparison to tiotropium 5 microgram (rate ratio (RR) 0.93, 99% Confidence Interval (CI), 0.85-1.02, p=0.0498). The study did not reach p<0.01, the pre-specified significance level of the study.

**Health-related Quality of Life**

Spiolto Respimat showed improvement in health-related quality of life as indicated by a reduction in St. George Respiratory Questionnaire (SGRQ) total score. After 24 weeks (Trials 1 and 2), there was a statistically significant improvement in mean SGRQ total score for Spiolto Respimat compared to tiotropium 5 microgram and olodaterol 5 microgram (Table 3); improvements were seen in all SGRQ domains. More patients treated with Spiolto Respimat had a clinically meaningful improvement in SGRQ total score (MCID, defined as a decrease of at least 4 units from baseline) compared to tiotropium 5 microgram (57.5% vs. 48.7%, p=0.0001) and olodaterol 5 microgram (57.5% vs. 44.8%, p<0.0001).

**Table 3: SGRQ total score after 24 weeks of treatment (Trials 1 and 2)**

<table>
<thead>
<tr>
<th>SGRQ total score</th>
<th>n</th>
<th>Treatment Mean (change from baseline)</th>
<th>Difference to Spiolto Respimat Mean (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td>43.5</td>
<td></td>
</tr>
<tr>
<td>Spiolto Respimat</td>
<td>979</td>
<td>36.7 (-6.8)</td>
<td></td>
</tr>
<tr>
<td>Tiotropium 5 microgram</td>
<td>954</td>
<td>37.9 (-5.6)</td>
<td>-1.23 (p=0.025)</td>
</tr>
<tr>
<td>Olodaterol 5 microgram</td>
<td>954</td>
<td>38.4 (-5.1)</td>
<td>-1.69 (p=0.002)</td>
</tr>
</tbody>
</table>

n= number of patients

In two additional 12-week, placebo-controlled clinical trials (Trials 7 and 8), SGRQ total score at 12 weeks was also included as primary endpoint as a measure of health-related quality of life.

In the 12-week trials, Spiolto Respimat demonstrated an improvement compared with placebo at week 12 in mean SGRQ total score (primary endpoint) of -4.9 (95%CI: −6.9, −2.9; p<0.0001) and -4.6 (95%CI: −6.5, −2.6; p<0.0001). In a pooled supportive analysis of the 12-week trials, the proportion of patients with a clinically meaningful decrease in SGRQ total score (defined as a decrease of at least 4 units from baseline) at week 12 was greater for Spiolto Respimat (52% [206/393]) compared with tiotropium 5 microgram (41% [159/384]; odds ratio: 1.56 (95% CI: 1.17, 2.07), p = 0.0022) and placebo (32% [118/370]; odds ratio: 2.35 (95% CI: 1.75, 3.16), p < 0.0001).

**Inspiratory capacity, breathing discomfort and exercise endurance**

The effect of Spiolto Respimat on inspiratory capacity, breathing discomfort and symptom-limited exercise endurance was investigated in three randomised, double-blind trials in COPD patients:
(i) two replicate, 6 week cross-over trials comparing Spiolto Respimat with tiotropium 5 microgram, olodaterol 5 microgram and placebo during constant work rate cycling (450 received Spiolto Respimat) [Trials 4 and 5]
(ii) one 12 week parallel group trial comparing Spiolto Respimat with placebo during constant work rate cycling (139 received Spiolto Respimat) and constant speed walking (sub-set of patients) [Trial 6]

Spiolto Respimat significantly improved inspiratory capacity at rest two hours post-dose compared to tiotropium 5 microgram (0.114 L, p<0.0001; Trial 4, 0.088 L, p=0.0005; Trial 5), olodaterol 5 microgram (0.119 L, p<0.0001; Trial 4, 0.080 L, p=0.0015; Trial 5) and placebo (0.244 L, p<0.0001; Trial 4, 0.265 L, p<0.0001; Trial 5) after 6 weeks.

In Trials 4 and 5, Spiolto Respimat significantly improved endurance time during constant work rate cycling compared to placebo after 6 weeks (Trial 4: geometric mean endurance time of 454 s for Spiolto Respimat compared to 375 seconds for placebo (20.9% improvement, p<0.0001); Trial 5: geometric mean endurance time of 466 seconds for Spiolto Respimat compared to 411 seconds for placebo (13.4% improvement, p<0.0001)).

In Trial 6, Spiolto Respimat significantly improved endurance time during constant work rate cycling compared to placebo after 12 weeks (geometric endurance time of 528 seconds for Spiolto Respimat compared to 464 seconds for placebo (13.8% improvement, p=0.021)).

Paediatric population
The European Medicines Agency has waived the obligation to submit the results of studies with Spiolto Respimat in all subsets of the paediatric population in chronic obstructive pulmonary disease (COPD) as per decision on class waivers (see section 4.2 for information on paediatric use).

5.2 Pharmacokinetic properties

a. General Introduction

When tiotropium and olodaterol were administered in combination by the inhaled route, the pharmacokinetic parameters for each component were similar to those observed when each active substance was administered separately.

Tiotropium and olodaterol demonstrate linear pharmacokinetics in the therapeutic range. On repeated once-daily inhalation administration, steady state of tiotropium is reached by day 7. Steady state of olodaterol is achieved after 8 days of once-daily inhalation, and accumulation is up to 1.8-fold as compared to a single dose.

b. General Characteristics of the Active Substance after Administration of the Medicinal Product

Absorption
Tiotropium: Urinary excretion data from young healthy volunteers suggests that approximately 33% of the dose inhaled via the RESPIMAT inhaler reaches the systemic circulation. The absolute bioavailability from an orally administered solution was found to be 2–3%. Maximum tiotropium plasma concentrations are observed 5–7 minutes after the inhalation via RESPIMAT.

Olodaterol: In healthy volunteers the absolute bioavailability of olodaterol following inhalation was estimated to be approximately 30%, whereas the absolute bioavailability was below 1% when given as an oral solution. Maximum olodaterol plasma concentrations generally are reached within 10 to 20 minutes following drug inhalation via RESPIMAT.

Distribution
**Tiotropium** has a plasma protein binding of 72% and shows a volume of distribution of 32 L/kg. Studies in rats have shown that tiotropium does not penetrate the blood-brain barrier to any relevant extent.

**Olodaterol** has a plasma protein binding of approximately 60% and shows a volume of distribution of 1110 L. Olodaterol is a substrate for the P-gp, OAT1, OAT3 and OCT1 transporter. Olodaterol is not a substrate for the following transporters: BCRP, MRP, OATP2, OATP8, OATP-B, OCT2 and OCT3.

**Biotransformation**

**Tiotropium**: The extent of metabolism is small. This is evident from 74% of an intravenous dose being excreted in the urine as unchanged drug. The ester tiotropium is nonenzymatically cleaved into its alcohol and acid component (N-methylscopine and dithienylglycolic acid, respectively), both not binding to muscarinic receptors. *In vitro* experiments with human liver microsomes and human hepatocytes suggest that some further drug (<20% of the dose after intravenous administration) is metabolised by cytochrome P450 (CYP) 2D6 and 3A4 dependent oxidation and subsequent glutathion conjugation to a variety of Phase II metabolites.

**Olodaterol** is substantially metabolized by direct glucuronidation and by O-demethylation at the methoxy moiety followed by conjugation. Of the six metabolites identified, only the unconjugated demethylation product binds to β2-receptors; this metabolite however is not detectable in plasma after chronic inhalation of the recommended therapeutic dose or doses of up to 4-fold higher. Cytochrome P450 isozymes CYP2C9 and CYP2C8, with negligible contribution of CYP3A4, are involved in the O-demethylation of olodaterol, while uridine diphosphate glycosyl transferase isoforms UGT2B7, UGT1A1, 1A7 and 1A9 were shown to be involved in the formation of olodaterol glucuronides.

**Elimination**

**Tiotropium**: The total clearance in healthy volunteers is 880 mL/min. Intravenously administered tiotropium is mainly excreted unchanged in urine (74%). After inhalation by COPD patients to steady-state, urinary excretion is 18.6% of the dose, the remainder being mainly non-absorbed drug in gut that is eliminated via the faeces. The renal clearance of tiotropium exceeds the glomerular filtration rate, indicating active secretion into the urine. The effective half-life of tiotropium following inhalation by COPD patients ranges between 27 and 45 h.

**Olodaterol**: Total clearance of olodaterol in healthy volunteers is 872 mL/min, and renal clearance is 173 mL/min. Following intravenous administration of [14C]-labelled olodaterol, 38% of the radioactive dose was recovered in the urine and 53% was recovered in faeces. The amount of unchanged olodaterol recovered in the urine after intravenous administration was 19%. Following oral administration, only 9% of the radioactivity (0.7% unchanged olodaterol) was recovered in urine, while the major portion was recovered in faeces (84%). More than 90% of the dose was excreted within 6 and 5 days following intravenous and oral administration, respectively. Following inhalation, excretion of unchanged olodaterol in urine within the dosing interval in healthy volunteers at steady state accounted for 5-7% of the dose. Olodaterol plasma concentrations after inhalation decline in a multiphasic manner with a terminal half-life of approximately 45 hours.

**c. Characteristics in Patients**

**Tiotropium**: As expected for all predominantly renally excreted drugs, advancing age was associated with a decrease of tiotropium renal clearance from 347 mL/min in COPD patients <65 years to 275 mL/min in COPD patients ≥65 years. This did not result in a corresponding increase in AUC₀₋₆,ss or Cₘₐₓ,ss values.

**Olodaterol**: A pharmacokinetic meta-analysis utilizing data from 2 controlled clinical trials that included 405 patients with COPD and 296 patients with asthma showed that no dose adjustment is necessary due to effects of age, gender and weight on systemic exposure to olodaterol.
Race
*Olodaterol:* Comparison of pharmacokinetic data within and across studies with olodaterol revealed a trend for higher systemic exposure in Japanese and other Asians than in Caucasians. No safety concerns were identified in clinical studies with olodaterol in Caucasians and Asians of up to one year with olodaterol Respimat at doses up to twice the recommended therapeutic dose.

Renal Insufficiency
*Tiotropium:* Following once daily inhaled administration of tiotropium to steady-state in COPD patients with mild renal impairment (CL_{CR} 50-80 mL/min) resulted in slightly higher AUC_{0-6,ss} (between 1.8 to 30% higher) and similar C_{max,ss} compared to patients with normal renal function (CL_{Cr} >80 mL/min). In subjects with moderate to severe renal impairment (CL_{CR} <50 ml/min) intravenous administration of tiotropium resulted in twofold higher total exposure (82% higher AUC_{0-4h} and 52% higher C_{max}) compared to subjects with normal renal function, which was confirmed by observations after dry powder inhalation.

*Olodaterol:* There were no clinically relevant increases of systemic exposure in patients with renal impairment.

Hepatic Insufficiency
*Tiotropium:* Liver insufficiency is not expected to have any relevant influence on tiotropium pharmacokinetics. Tiotropium is predominantly cleared by renal elimination (74% in young healthy volunteers) and simple non-enzymatic ester cleavage to pharmacologically inactive products.

*Olodaterol:* There was no evidence for differences in elimination of olodaterol, nor did protein binding differ, between subjects with mild or moderate hepatic impairment and their healthy controls. A study in subjects with severe hepatic impairment was not performed.

5.3 Preclinical safety data

*Tiotropium + olodaterol*
Effects in non-clinical studies with the combination tiotropium/olodaterol were observed only at exposures considered sufficiently in excess of the maximum human exposure indicating little relevance to clinical use.

*Tiotropium*
Studies on genotoxicity and carcinogenic potential revealed no special hazard for humans. Harmful effects with respect to pregnancy, embryonal/foetal development, parturition or postnatal development could only be demonstrated at maternally toxic dose levels. Tiotropium bromide was not teratogenic in rats or rabbits. The respiratory (irritation) and urogenital (prostatitis) changes and reproductive toxicity were observed at local or systemic exposures more than five-fold the therapeutic exposure.

*Olodaterol*
Studies on genotoxicity and carcinogenic potential revealed no special hazard for humans. Increased incidences were observed of mesovarian leiomyoma in rats and of uterus leiomyoma and leiomyosarcoma in mice. This is considered a class effect which is observed in rodents after long-term exposure to high doses of β₂-agonists. Up to now, β₂-agonists have not been associated with cancer in humans.

In rats, no teratogenic effects occurred after inhalation at doses of 1054 microgram/kg/day (> 2600 times the human exposure (AUC_{0-24h}) at the dose of 5 mcg). In pregnant NZW rabbits, an inhalation dose of 2489 microgram/kg/day (approximately 7130 times the human exposure at 5 microgram based on AUC_{0-24h}) of olodaterol exhibited fetal toxicity characteristically resulting from beta-adrenoceptor stimulation; these included patchy ossifications, short/bent bones, partially open eye, cleft palate,
cardiovascular abnormalities. No significant effects occurred at an inhalation dose of 974 microgram/kg/day (approximately 1353 times the 5 microgram dose based on AUC(0-24h)).

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Benzalkonium chloride
Disodium edetate
Water, purified
1M Hydrochloric acid (for pH adjustment)

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

3 years
In-use shelf life cartridge: 3 months

In-use shelf-life inhaler: 1 year

Recommended use: 6 cartridges per inhaler

Note: The functioning of the RESPIMAT re-usable inhaler has been demonstrated in tests for 540 actuations (corresponding to 9 cartridges).

6.4 Special precautions for storage

Do not freeze.

6.5 Nature and contents of container

Type and material of the container in contact with the medicinal product:
Solution filled into a polyethylene/polypropylene cartridge with a polypropylene cap with integrated silicone sealing ring. The cartridge is enclosed within an aluminium cylinder.
Each cartridge contains 4 ml inhalation solution.

Pack sizes and devices supplied:

Single pack: 1 Respimat re-usable inhaler and 1 cartridge, providing 60 puffs (30 medicinal doses)

Triple pack: 1 Respimat re-usable inhaler and 3 cartridges, providing 60 puffs (30 medicinal doses) each
Single refill pack: 1 cartridge, providing 60 puffs (30 medicinal doses)
Triple refill pack: 3 cartridges, providing 60 puffs (30 medicinal doses) each

Not all pack sizes may be marketed.
6.6 Special precautions for disposal and other handling

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

7. MARKETING AUTHORISATION HOLDER

Boehringer Ingelheim International GmbH
Binger Strasse 173
D-55216 Ingelheim am Rhein
Germany

8. MARKETING AUTHORISATION NUMBER(S)

<To be completed nationally>

9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

<DD/MM/YYYY> <DD month YYYY>

<To be completed nationally>

10. DATE OF REVISION OF THE TEXT

{MM/YYYY}

<To be completed nationally>
LABELLING

Version: 27 November 2018
PARTICULARS TO APPEAR ON THE OUTER PACKAGING
FOLDING BOX

1. NAME OF THE MEDICINAL PRODUCT

Spiolto Respimat 2.5 microgram/2.5 microgram, inhalation solution
tiotropium/olodaterol

2. STATEMENT OF ACTIVE SUBSTANCE(S)

The delivered dose is 2.5 microgram tiotropium (as bromide monohydrate) and 2.5 microgram olodaterol (as hydrochloride) per puff

3. LIST OF EXCIPIENTS

List of excipients: Benzalkonium chloride
Disodium edetate
Purified water
1M Hydrochloric acid for pH adjustment

4. PHARMACEUTICAL FORM AND CONTENTS

Inhalation solution
One cartridge contains 4.0 ml providing 60 puffs (30 medicinal doses)

Re-usable Cartridge

Single pack: 1 Respimat re-usable Inhaler and 1 cartridge

Triple pack: 1 Respimat re-usable Inhaler and 3 cartridges

Single refill pack: 1 cartridge
Triple refill pack: 3 cartridges

5. METHOD AND ROUTE(S) OF ADMINISTRATION

Inhalation use
Read the package leaflet before use

Insert cartridge in the Respimat re-usable inhaler before use

6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN

Keep out of the sight and reach of children.

7. OTHER SPECIAL WARNING(S), IF NECESSARY
8. **EXPIRY DATE**

EXP
In-use shelf life cartridge: 3 months

9. **SPECIAL STORAGE CONDITIONS**

Do not freeze.

10. **SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

11. **NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Boehringer Ingelheim International GmbH
D-55216 Ingelheim am Rhein
Germany

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

To be completed nationally

13. **BATCH NUMBER**

Batch:

14. **GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

15. **INSTRUCTIONS ON USE**

16. **INFORMATION IN BRAILLE**

Spiolto Respimat cartridge

17. **UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

18. **UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC: {number} [product code]
SN: {number} [serial number]
NN: {number} [national reimbursement number or other national number identifying the medicinal product]
## MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

### DEVICE – Front label

### 1. NAME OF THE MEDICINAL PRODUCT

Spiolto Respimat 2.5 microgram/2.5 microgram inhalation solution tiotropium/olodaterol

### 2. NAME OF THE MARKETING AUTHORISATION HOLDER

Boehringer Ingelheim

### 3. EXPIRY DATE

Exchange cartridge not later than 3 months after insertion

### 4. BATCH NUMBER

(See device back label)

### 5. OTHER

Re-usable Inhaler
60 puffs (30 medicinal doses)
▷▷ Turn ▷▷
<table>
<thead>
<tr>
<th>Minimum Particulars to Appear on Blisters or Strips</th>
</tr>
</thead>
</table>

**Device – Back Label (Requirements according to Medical Device Directive)**

1. **Name of the Medicinal Product**
   - Spiolto Respimat Inhaler

2. **Name of the Marketing Authorisation Holder**
   - Boehringer Ingelheim Pharma GmbH & Co. KG
     - D-55216 Ingelheim
     - CE 0123

3. **Expiry Date**
   - Batch:

4. **Batch Number**
   - Batch:

5. **Other**
   - Re-usable
   - Cartridge counter/6 tick-marking boxes
   - ⬤ ⬤ Turn ⬤ ⬤
   - Boehringer Ingelheim Pharma GmbH & Co. KG
     - D-55216 Ingelheim
     - CE 0123
MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS

CARTRIDGE LABEL

1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION

Spiolto Respimat
2.5 microgram/2.5 microgram inhalation solution
tiotropium/olodaterol

2. METHOD OF ADMINISTRATION

Inhalation use

3. EXPIRY DATE

EXP
Exchange cartridge not later than 3 months after insertion

4. BATCH NUMBER

Batch:

5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT

One cartridge contains 4.0 ml providing 60 puffs (30 medicinal doses)

6. OTHER

Cartridge
Remove Cartridge
Cartridge for insertion in
Spiolto Respimat
Re-usable Inhaler
Package leaflet: Information for the user

Spiolto Respimat 2.5 microgram/2.5 microgram, inhalation solution
 tiotropium/olodaterol

This medicine is subject to additional monitoring. This will allow quick identification of new safety information. You can help by reporting any side effects you may get. See the end of section 4 for how to report side effects.

Read all of this leaflet carefully before you start taking 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 Spiolto Respimat is and what it is used for
2. What you need to know before you take Spiolto Respimat
3. How to take Spiolto Respimat
4. Possible side effects
5. How to store Spiolto Respimat
6. Contents of the pack and other information

1. What Spiolto Respimat is and what it is used for

What Spiolto Respimat is

Spiolto Respimat contains two active substances called tiotropium and olodaterol. These belong to a group of medicines called long-acting bronchodilators. Tiotropium belongs to the subgroup of anticholinergics; olodaterol belongs to the subgroup of long acting beta₂ agonists.

What Spiolto Respimat is used for

Spiolto Respimat helps adult patients who have chronic obstructive pulmonary disease (COPD) to breathe more easily. COPD is a long-term lung disease that causes shortness of breath and coughing. The term COPD is associated with the conditions chronic bronchitis and emphysema.

Spiolto Respimat helps to open your airways and make it easier to get air in and out of the lungs. Regular use of Spiolto Respimat can also help you when you have on-going shortness of breath related to your disease, and will help to minimise the effects of the disease on your everyday life. As COPD is a long-term disease you should take Spiolto Respimat every day and not only when you have breathing problems or other symptoms of COPD.

2. What you need to know before you take Spiolto Respimat

Do not use Spiolto Respimat
if you are allergic to tiotropium or olodaterol or any of the other ingredients of this medicine (listed in section 6)
if you are allergic to atropine or substances related to it, e.g. ipratropium or oxitropium

Warnings and precautions

Talk to your doctor or pharmacist before using Spiolto Respimat

- if you have asthma (you should not use Spiolto Respimat for the treatment of asthma).
- if you have diseases of the heart.
- if you have high blood pressure.
- if you have epilepsy.
- if you have a specific thyroid gland problem called thyrotoxicosis.
- if you have an abnormal widening of an artery called aneurysm.
- if you have diabetes.
- if you have severe hepatic (liver) disease.
- if you have renal (kidney) disease.
- in case of a planned surgery.
- if you have an eye problem called narrow-angle glaucoma.
- if you have prostate problems or have difficulty passing urine.

During treatment with Spiolto Respimat

- **Stop using the medicine and tell your doctor immediately** if you get tightness of the chest, coughing, wheezing or breathlessness immediately after using the medicine. These may be signs of a condition called bronchospasm (see section 4).

- If your breathing has got worse or if you experience rash, swelling or itching directly after using your inhaler, stop using it and tell your doctor immediately (see section 4).

- If you experience any side effects affecting your heart (increase in pulse rate, increase in blood pressure and/or increase in symptoms like chest pain), tell your doctor immediately (see section 4).

- If you experience muscle spasm, muscle weakness or abnormal heart rhythm, consult your doctor as these may be related to low blood levels of potassium (see section 4).

When taking Spiolto Respimat take care not to let any spray enter your eyes. This may result in eye pain or discomfort, blurred vision, seeing halos around lights or coloured images in association with red eyes (i.e. narrow angle glaucoma). Eye symptoms may be accompanied by headache, nausea or vomiting. Wash your eyes in warm water, stop using Spiolto Respimat and immediately consult your doctor for further advice.

Spiolto Respimat is indicated for the maintenance treatment of your chronic obstructive pulmonary disease. **It should not be used to treat a sudden attack of breathlessness or wheezing.**

Do not use Spiolto Respimat together with certain medicines containing long-acting β-adrenergic agonists, like salmeterol or formoterol.

If you regularly take certain medicines called short-acting β-adrenergic agents, like salbutamol, continue to use these only to relieve acute symptoms like breathlessness.
Dry mouth which has been observed with anti-cholinergic treatment may in the long term be associated with dental caries. Therefore, please remember to pay attention to oral hygiene.

Do not take Spiolto Respimat more frequently than once daily.

Children and adolescents
Spiolto Respimat should not be given to children or adolescents (below the age of 18 years).

Other medicines and Spiolto Respimat
Please tell your doctor or pharmacist if you are taking, or have recently taken any other medicines.

In particular, please tell your doctor if you are using:
- any medicines that may be similar to Spiolto Respimat (contain similar active substances, such as anticholinergic drugs or β-adrenergic agents). You may be more likely to get side effects.
- medicines called beta blockers that are used for high blood pressure or other heart problems (such as propranolol), or for the eye problem called glaucoma (such as timolol). This may result in loss of the effect of Spiolto Respimat
- medicines that lower the amount of potassium in your blood. These include:
  - steroids (e.g. prednisolone),
  - diuretics (water tablets),
  - medicines for breathing problems such as theophylline.
  If you use these medicines together with Spiolto Respimat you may experience symptoms of muscle spasm, muscle weakness or abnormal heart rhythm.
- medicines called tricyclic antidepressants or monoamine oxidase (MAO) inhibitors (like selegiline or moclobemide), that are used to treat neurological or psychiatric disorders like Parkinson’s disease or depression; the use of these drugs will increase the likelihood that you get side effects affecting your heart.

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. You should not use this medicine unless specifically recommended by your doctor.

Driving and using machines
No studies on the effects on the ability to drive and use machines have been performed.
If you feel dizzy or if blurred vision occurs while taking Spiolto Respimat, do not drive or use any tools or machines.

Spiolto Respimat contains Benzalkonium chloride
This medicine contains 0.0011 mg benzalkonium chloride in each actuation.
Benzalkonium chloride may cause wheezing and breathing difficulties (bronchospasm), especially if you have asthma.

3. How to take Spiolto Respimat
Always take this medicine exactly as your doctor has told you. Check with your doctor or pharmacist if you are not sure.

Spiolto Respimat is for inhalation use only.

Dosage

The recommended dose is:

Spiolto Respimat is effective for 24 hours so you will need to use Spiolto Respimat only ONCE A DAY, if possible at the same time of the day. Each time you use it take TWO PUFFS.

As COPD is a long-term disease take Spiolto Respimat every day and not only when you experience breathing problems. Do not take more than the recommended dose.

Use in children and adolescents
There is no relevant use of Spiolto Respimat in the paediatric population (under 18 years).

Make sure that you know how to use your Spiolto Respimat inhaler properly. The instructions for use of the Spiolto Respimat inhaler are provided on the other side of this leaflet.

If you take more Spiolto Respimat than you should
You may be at a higher risk of experiencing a side effect such as dry mouth, constipation, difficulties passing urine, blurred vision, chest pain, high or low blood pressure, faster or irregular heartbeat or feeling of heart beat, dizziness, nervousness, difficulty in sleeping, anxiety, headache, shaking, muscle cramps, nausea, fatigue, malaise, low blood levels of potassium (which may cause symptoms of muscle spasm, muscle weakness or abnormal heart rhythm), high blood sugar, or too much acid in your blood (which may cause symptoms of nausea, vomiting, weakness, muscle cramps and more rapid breathing).

If you forget to take Spiolto Respimat
If you forget to inhale a dose, inhale just one dose at the usual time the next day.
Do not take a double dose to make up for a forgotten dose.

If you stop using Spiolto Respimat
Before you stop taking Spiolto Respimat, you should talk to your doctor or your pharmacist. If you stop taking Spiolto Respimat the signs and symptoms of COPD may worsen.

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.

If any of the following occurs, please stop using this medicine and consult your doctor immediately.

- Immediate allergic reactions to Spiolto Respimat are rare (they may affect up to 1 in 1,000 people). These reactions may occur individually or as part of a severe allergic reaction (anaphylactic reaction) after administration of Spiolto Respimat. These include rash, nettle rash (urticaria), swelling of the mouth and face, sudden difficulties in breathing (angioneurotic
oedema) or other hypersensitivity reactions (such as sudden reduction of your blood pressure or light headedness).

- As with all inhaled medications, tightness of the chest, associated with coughing, wheezing or breathlessness may occur immediately after inhalation (paradoxical bronchospasm). The frequency cannot be estimated from the available data.
- seeing halos around lights or coloured images in association with red eyes (glaucoma). The frequency cannot be estimated from the available data.
- blockage of intestines or absence of bowel movements (intestinal obstruction, including ileus paralytic). The frequency cannot be estimated from the available data.

Other possible side effects:

- Uncommon (may affect up to 1 in 100 people)
  - faster heart beat (tachycardia)
  - dizziness
  - headache
  - cough
  - hoarseness (dysphonia)
  - dry mouth

- Rare (may affect up to 1 in 1,000 people)
  - irregular heart beat (atrial fibrillation)
  - rapid heartbeat (supraventricular tachycardia)
  - feeling your heartbeat (palpitations)
  - high blood pressure (hypertension)
  - difficulties passing urine (urinary retention)
  - infections of the urinary tract
  - painful urination (dysuria)
  - sore throat (pharyngitis)
  - inflammation of the larynx (laryngitis)
  - inflammation of the gums (gingivitis)
  - inflammation of the mouth (stomatitis)
  - fungal infections of the mouth and throat (oropharyngeal candidiasis)
  - nosebleed (epistaxis)
  - difficulty in sleeping (insomnia)
  - blurred vision
  - tightness of the chest, associated with coughing, wheezing or breathlessness immediately after inhalation (bronchospasm)
  - constipation
  - feeling sick (nausea)
  - itching (pruritus)
  - joint pain (arthritis)
  - swelling of joint
  - back pain

- Not known (frequency cannot be estimated from the available data)
  - increase of the measured eye pressure
  - nasopharyngitis
  - inflammation in sinuses (sinusitis)
  - difficulties swallowing (dysphagia)
  - inflammation of the tongue (glossitis)
  - heart burn (gastrooesophageal reflux disease)
  - dental caries
  - infections or ulcerations of the skin
- dryness of the skin
- depletion of body water (dehydration)

You may also experience side effects which are known to occur with certain medicines for breathing problems similar to Spiolto Respimat (beta-adrenergic agents). These may be irregular heartbeat, chest pain, low blood pressure, shaking, nervousness, muscle cramps, fatigue, malaise, low blood levels of potassium (which may cause symptoms of muscle spasm, muscle weakness or abnormal heart rhythm), high blood sugar, or too much acid in your blood (which may cause symptoms of nausea, vomiting, weakness, muscle cramps and more rapid breathing).

**Reporting of side effects**
If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via the national reporting system listed in Appendix V. By reporting side effects, you can help provide more information on the safety of this medicine.

5. **How to store Spiolto Respimat**

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 carton and on the inhaler label after EXP. The expiry date refers to the last day of the month.

Do not freeze.

In-use shelf-life
Exchange the cartridge latest three months after insertion.
Do not use the Respimat re-usable inhaler for more than one year.
Recommended use: 6 cartridges per inhaler

Note: The functioning of the RESPIMAT re-usable inhaler has been demonstrated in tests for 540 actuations (corresponding to 9 cartridges).

Do not throw away any medicines via wastewater or household waste. 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 Spiolto Respimat contains**

The active substances are tiotropium and olodaterol. The delivered dose is 2.5 microgram tiotropium (as bromide monohydrate) and 2.5 microgram olodaterol (as hydrochloride) per puff.

The delivered dose is the dose which is available for the patient after passing the mouthpiece.

The other ingredients are:
Benzalkonium chloride, disodium edetate, purified water and hydrochloric acid for pH adjustment

**What Spiolto Respimat looks like and contents of the pack**
Spiolto Respimat is composed of one cartridge with inhalation solution and one Respimat inhaler. The cartridge has to be inserted into the inhaler before the first use.

Single pack: 1 Respimat re-usable inhaler and 1 cartridge, providing 60 puffs (30 medicinal doses)

Triple pack: 1 Respimat re-usable inhaler and 3 cartridges, providing 60 puffs (30 medicinal doses) each

Single refill pack: 1 cartridge, providing 60 puffs (30 medicinal doses)
Triple refill pack: 3 cartridges, providing 60 puffs (30 medicinal doses) each

Not all pack sizes may be marketed.

**Marketing Authorisation Holder and Manufacturer**

The marketing authorisation holder for Spiolto Respimat is:

Boehringer Ingelheim International GmbH
Binger Straße 173
D-55216 Ingelheim am Rhein
Germany

The manufacturer for Spiolto Respimat is:

Boehringer Ingelheim Pharma GmbH & Co. KG
Binger Straße 173
D-55216 Ingelheim am Rhein
Germany

**This medicinal product is authorised in the Member States of the EEA under the following names:**

**Austria, Liechtenstein:** Spiolto Respimat 2,5 Mikrogramm/2,5 Mikrogramm – Lösung zur Inhalation

**Belgium, Luxembourg:** Spiolto Respimat 2,5 microgrammes/2,5 microgrammes/inhalation, solution à inhaler

**Bulgaria:** Spiolto Respimat Спиолто Респимат

**Cyprus, Greece:** Spiolto Respimat

**Croatia:** Spiolto Respimat 2,5 mikrograma/2,5 mikrograma, otopina inhalata

**Czech Republic:** Spiolto Respimat 2,5 mikrogramů/2,5 mikrogramů

**Denmark:** Spiolto Respimat

**Estonia:** Spiolto Respimat

**Finland:** Inspiolto Respimat 2,5 mikrog/2,5 mikrog inhalationeste, liuos

**France:** Spiolto Respimat 2,5 microgrammes/2,5 microgrammes/dose, solution à inhaler

**Germany:** Spiolto Respimat 2,5 Mikrogramm/2,5 Mikrogramm pro Hub Lösung zur Inhalation

**Hungary:** Spiolto Respimat 2,5 mikrogramm/2,5 mikrogramm inhalációs oldat

**Iceland:** Spiolto Respimat

**Ireland, Malta, UK:** Spiolto Respimat
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<td>Spiolto Respimat</td>
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This leaflet was last revised in {MM/YYYY}.

To be completed nationally

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SPIOLTO® RESPIMAT®
Instructions For Use

Introduction

Read these Instructions for Use before you start using Spiolto Respimat re-usable.

You will need to use this inhaler only ONCE A DAY. Each time you use it take TWO PUFFS.

- If not been used for more than 7 days release one puff towards the ground.
- If not been used for more than 21 days repeat steps 4 to 6 under ‘Prepare for use’ until a cloud is visible. Then repeat steps 4 to 6 three more times.

How to care for your Spiolto Respimat re-usable

Clean the mouthpiece including the metal part inside the mouthpiece with a damp cloth or tissue only, at least once a week.

Any minor discoloration in the mouthpiece does not affect your Spiolto Respimat re-usable inhaler performance.

If necessary, wipe the outside of your Spiolto Respimat re-usable inhaler with a damp cloth.

When to replace the inhaler

When you have used an inhaler with 6 cartridges, get a new Spiolto RESPIMAT re-usable pack containing an inhaler.
Prepare for use

1. Remove clear base
   - Keep the cap closed.
   - Press the safety catch while pulling off the clear base with your other hand.

2. Insert cartridge
   - Insert the cartridge into the inhaler.
   - Place the inhaler on a firm surface and push down firmly until it clicks into place.

3. Track cartridge
   - Mark the check-box on inhaler’s label to track the number of cartridges.
   - Put the clear base back into place until it clicks.
<table>
<thead>
<tr>
<th>Step</th>
<th>Instructions</th>
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| 4. Turn | - Keep the cap closed.  
- Turn the clear base in the direction of the arrows on the label until it clicks (half a turn). |
| 5. Open | - Open the cap until it snaps fully open. |
| 6. Press | - Point the inhaler toward the ground.  
- Press the dose-release button.  
- Close the cap.  
- Repeat steps 4-6 until a cloud is visible.  
- **After a cloud is visible**, repeat steps 4-6 three more times.  
Your inhaler is now ready to use and will deliver 60 puffs (30 doses). |
### Daily use

| TURN   | Keep the cap closed.  
|        | TURN the clear base in the direction of the arrows on the label until it clicks (half a turn). |
| OPEN   | OPEN the cap until it snaps fully open. |
| PRESS  | Breathe out slowly and fully.  
|        | Close your lips around the mouthpiece without covering the air vents. Point your Inhaler to the back of your throat.  
|        | While taking a slow, deep breath through your mouth, PRESS the dose-release button and continue to breathe in slowly for as long as comfortable.  
|        | Hold your breath for 10 seconds or for as long as comfortable.  
|        | Repeat TURN, OPEN, PRESS for a total of 2 puffs.  
|        | Close the cap until you use your inhaler again. |

### When to replace the Spiolto Respimat cartridge

The dose indicator shows how many puffs remain in the cartridge.

60 puffs remaining
Less than 10 puffs remaining. Obtain a new cartridge.

Your cartridge is used up. Turn the clear base to loosen it. Your inhaler is now in a locked position. Pull off the cartridge from the inhaler. Insert a new cartridge (continue with step 2).

Answers to Common Questions

**It is difficult to insert the cartridge deep enough.**

Did you accidentally turn the clear base before inserting the cartridge? Open the cap, press the dose-release button, then insert the cartridge. 
Are you replacing the cartridge? The new cartridge will stick out more than the very first cartridge. Insert it until it clicks, then replace the clear base.

**I cannot press the dose-release button.**

Did you turn the clear base? If not, turn the clear base in a continuous movement until it clicks (half a turn). 
Does the dose indicator on your cartridge display a white arrow on a red background? Your cartridge is used up. Insert a new cartridge.

**It is difficult to remove the cartridge after it is used up.**

Pull and turn the cartridge at the same time.

**I cannot turn or replace the clear base.**

Did you turn the clear base already? 
If the clear base has already been turned, follow steps “OPEN” and “PRESS” under “Daily Use” to get your medicine. 
Is the clear base loose and does the dose indicator on your cartridge display a white arrow on a red background? Your cartridge is used up. Insert a new cartridge.

**My Respimat re-usable has been used up too early.**

Did you use Respimat re-usable as indicated (two puffs/once daily)? Respimat will last 30 days if used at two puffs once daily. 
Did you spray in the air often to check whether the Respimat re-usable is working? Once you have prepared Respimat re-usable, no test-spraying is required if used daily.

**My Respimat re-usable doesn’t spray.**

Did you insert a cartridge? If not, insert a cartridge. Once your Respimat re-usable is assembled, do not remove the clear base or the cartridge until the cartridge is used up. 
Did you repeat TURN, OPEN, PRESS less than three times after inserting the cartridge?
Repeat TURN, OPEN, PRESS three times after inserting the cartridge as shown in the steps 4 to 6 under “Prepare for use”.

**Does the dose indicator on your cartridge display a white arrow on a red background?** Your cartridge is used up. Insert a new cartridge.

**My Respimat re-usable sprays automatically.**

- **Was the cap open when you turned the clear base?** Close the cap, then turn the clear base.
- **Did you press the dose-release button when turning the clear base?** Close the cap, so the dose-release button is covered, then turn the clear base.
- **Did you stop when turning the clear base before it clicked?** Turn the clear base in a continuous movement until it clicks (half a turn).
- **Was the cap open when you replaced the cartridge?** Close the cap, then replace the cartridge.