

PRODUCT MONOGRAPH  
INCLUDING PATIENT MEDICATION INFORMATION

**Pr** **FASENRA**<sup>®</sup>

Benralizumab Injection

30 mg/mL solution for subcutaneous injection

**Pr** **FASENRA PEN**<sup>™</sup>

Benralizumab Injection

30 mg/mL solution for subcutaneous injection

Anti-eosinophil  
(anti-interleukin-5 receptor alpha monoclonal antibody)

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## RECENT MAJOR LABEL CHANGES

Warnings and Precautions - Sensitivity/Resistance (7)	02/2019
Adverse Reactions – Post-Market Adverse Reaction (8.3)	02/2019
Patient Medication Information	05/2019
Indication (1.0)	02/2019
Dosing and Administration – Dosing considerations (3.1)	02/2019
Dosing and Administration – Recommended dose and dosage adjustment (3.2)	02/2019
Dosing and Administration – Administration (3.3)	02/2019
Dosage forms, strengths, composition and packaging	02/2019
Adverse reactions – Clinical trial adverse events (8.2)	02/2019
Drug Interactions – Drug-Drug interactions (9.2)	02/2019
Action and Clinical Pharmacology – Pharmacodynamics (10.2)	02/2019
Storage, stability and disposal (12.0)	02/2019
Pharmaceutical information (13.0)	02/2019
Clinical Trials – Long term extension study (14.3)	02/2019
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## PART I: HEALTH PROFESSIONAL INFORMATION

### 1 INDICATIONS

FASENRA (benralizumab injection) is indicated as an add-on maintenance treatment of adult patients with severe eosinophilic asthma.

**FASENRA is not indicated for other eosinophilic conditions or for relief of acute bronchospasm or status asthmaticus (see WARNINGS AND PRECAUTIONS).**

#### 1.1 Pediatrics

**Pediatrics (< 18 years of age):** FASENRA is not indicated in the pediatric population, as the efficacy and safety of FASENRA has not been established in patients less than 18 years of age (see WARNINGS AND PRECAUTIONS, Special Populations).

#### 1.2 Geriatrics

**Geriatrics (≥ 65 years of age):** There is limited experience with FASENRA in patients 65 years of age and older. No overall differences in efficacy or safety of FASENRA were observed between geriatric and adult patients treated with FASENRA in clinical trials. Sensitivity of some older individuals, however, cannot be excluded (see WARNINGS AND PRECAUTIONS, Special Populations and ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations and Conditions).

### 2 CONTRAINDICATIONS

FASENRA (benralizumab injection) is contraindicated in patients who are hypersensitive to benralizumab, or to any ingredient(s) in the formulation (see DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING).

### 3 DOSAGE AND ADMINISTRATION

#### 3.1 Dosing Considerations

FASENRA (benralizumab injection) is for subcutaneous use only.

FASENRA treatment should be initiated by a qualified healthcare professional experienced in the diagnosis and treatment of severe asthma.

After proper training in the subcutaneous injection technique and education about signs and symptoms of hypersensitivity reactions (see WARNINGS AND PRECAUTIONS), patients or their caregivers may administer FASENRA if their physician determines that it is appropriate, with medical follow-up as necessary. Administration of FASENRA by patients or their caregivers should only be considered if they have demonstrated proficiency in FASENRA administration.

Monitoring of patients after administration of biologic agents is recommended (see WARNINGS AND PRECAUTIONS).

### 3.2 Recommended Dose and Dosage Adjustment

The recommended dose of FASENRA is 30 mg administered once every 4 weeks for the first 3 doses, and then once every 8 weeks thereafter by subcutaneous injection into the thigh, or abdomen. The upper arm can be used if a healthcare professional or caregiver administers the injection.

**Pediatrics (< 18 years of age):** FASENRA is not indicated for use in the pediatric population as the efficacy and safety of FASENRA has not been established in patients 12 to 18 years of age (see CLINICAL TRIALS). No studies have been conducted in children below 12 years of age.

**Geriatrics (≥ 65 years of age):** No dose adjustment is required for elderly patients (see ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations).

**Renal Impairment:** No dose adjustment is required for patients with renal impairment (see ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations).

**Hepatic Impairment:** No dose adjustment is required for patients with hepatic impairment (see ACTION AND CLINICAL PHARMACOLOGY, Pharmacokinetics, Special Populations).

### 3.3 Administration

A patient may self-inject FASENRA or the patient's caregiver may administer FASENRA if their healthcare professional determines it is appropriate. The healthcare professional should ensure appropriate initiation and follow-up of patients. Proper training in subcutaneous injection technique using the prefilled syringe or autoinjector (FASENRA PEN) should be provided according to the INSTRUCTIONS FOR USE.

Patients should be instructed to watch for signs of anaphylaxis and seek immediate emergency medical assistance if they suspect signs of anaphylaxis after self-administration (see WARNINGS AND PRECAUTIONS, Sensitivity/Resistance).

Do not administer FASENRA into areas where the skin is tender, bruised, erythematous, or hardened.

Prior to administration, warm FASENRA by placing the product at room temperature. This generally takes 30 minutes from a refrigerated storage condition.

Additional information and instructions for the preparation and administration of FASENRA using the prefilled syringe or autoinjector (FASENRA PEN) are given in the INSTRUCTIONS FOR USE.

### 3.4 Missed Dose

If a dose is missed or the patient is unable to keep an appointment for one of the injections, the missed dose should be administered as soon as possible.

## 4 OVERDOSAGE

Doses of up to 200 mg were administered subcutaneously in clinical trials to patients with asthma without evidence of dose-related toxicities.

There is no specific treatment for an overdose with FASENRA (benralizumab injection). If overdose occurs, the patient should be monitored for any signs or symptoms of adverse effects and given appropriate supportive symptomatic treatment.

For management of a suspected drug overdose, contact your regional poison control centre.

## 5 DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING

**Table 1 Dosage Forms, Strengths, Composition and Packaging**

Route of Administration	Dosage Form / Strength/Composition	Non-medicinal Ingredients
By subcutaneous injection	30 mg/mL solution in a: <ul style="list-style-type: none"><li>• 1 mL single use prefilled syringe or;</li><li>• 1 mL single use autoinjector</li></ul>	L-histidine; L-histidine hydrochloride monohydrate; $\alpha,\alpha$ -trehalose dihydrate; and polysorbate 20; and Water for Injection.

### **Prefilled syringe**

FASENRA (benralizumab injection) is available in a pack containing one single use, sterile prefilled syringe.

Each prefilled syringe contains 30 mg benralizumab in 1 mL (30 mg/mL). The prefilled syringe is comprised of a type I glass barrel with a staked 29 gauge 12.7 mm stainless steel needle, rigid needle shield and FluoroTec-coated plunger stopper in a passive safety device to prevent needle stick injuries.

### **Autoinjector**

FASENRA is available in a pack containing one single use, sterile autoinjector (FASENRA PEN).

Each autoinjector contains 30 mg benralizumab in 1 mL (30mg/mL). The autoinjector is comprised of type I glass with a staked 29 gauge 12.7 mm stainless steel needle, rigid needle shield and Fluorotec-coated stopper in a autoinjector.

## 6 DESCRIPTION

FASENRA (benralizumab injection) is a targeted, humanized monoclonal antibody (IgG1, kappa) that selectively binds to the alpha subunit of the human interleukin-5 receptor (IL-5R $\alpha$ ) with a low dissociation constant. Benralizumab is produced in Chinese hamster ovary cells by recombinant DNA technology. Benralizumab has a molecular weight of approximately 150 kDa.

## 7 WARNINGS AND PRECAUTIONS

### **General**

**Acute Asthma Symptoms or Deteriorating Disease:** FASENRA (benralizumab injection) should not be used to treat acute asthma symptoms or acute exacerbations. **Do not use FASENRA to treat acute bronchospasm or status asthmaticus.**

Patients should be instructed to seek medical advice if their asthma remains uncontrolled or worsens after initiation of treatment with FASENRA.

#### Corticosteroid Reduction:

Abrupt discontinuation of corticosteroids after initiation of FASENRA therapy is not recommended. Reduction in corticosteroid dose may be associated with systemic withdrawal symptoms and/or unmask conditions previously suppressed by systemic corticosteroid therapy. Reduction in corticosteroid doses, if appropriate, should be gradual and performed under the supervision of a physician.

#### **Infection**

Eosinophils may be involved in the immunological response to some helminth infections. Patients with pre-existing helminth infections were excluded from participation in clinical trials. It is unknown if FASENRA may influence a patient's response against helminth infections. Patients with pre-existing helminth infections should be treated for their infection prior to therapy with FASENRA.

If patients become infected while receiving treatment with FASENRA and do not respond to anti-helminth treatment, discontinue treatment with FASENRA until infection resolves.

#### **Sensitivity/Resistance**

Hypersensitivity reactions (e.g., anaphylaxis, angioedema, urticaria, rash) have occurred following administration of FASENRA. These reactions may occur within hours of administration, but in some instances have a delayed onset (i.e., days). In the event of a hypersensitivity reaction, FASENRA should be discontinued (see CONTRAINDICATIONS).

#### **Sexual Health**

*Fertility:* No data are available on the effect of FASENRA on human fertility. A study in monkeys did not show any effects on reproductive organs or reproductive parameters (see NON-CLINICAL TOXICOLOGY).

### **7.1 Special Populations**

#### **7.1.1 Pregnant Women**

No studies have been conducted with FASENRA in pregnant women. In clinical trials there were too few pregnancies to inform on maternal and fetal health and developmental outcomes. A study in monkeys showed that benralizumab is pharmacologically active in infants exposed during organogenesis through parturition. Systemic exposure to benralizumab and suppression of eosinophil counts were observed in offspring of exposed animals. Animal studies did not demonstrate any additional effects on pregnancy or neonatal/infant development (see NON-CLINICAL TOXICOLOGY).

Animal studies are not always predictive of human response; therefore, it is not known whether FASENRA can cause fetal harm when administered to a pregnant woman.

FASENRA should not be used by pregnant women unless the expected benefit to the mother justifies the potential risk to the fetus. Women should be advised to contact their physicians if they become pregnant while receiving FASENRA and for up to 4 months after treatment is stopped.

### Pregnancy Registry

To monitor maternal-fetal outcomes of pregnant women exposed to FASENRA, a pregnancy registry has been established. Healthcare professionals are encouraged to register patients, and pregnant women are encouraged to enroll themselves by calling 1-877-311-8972 or visiting <http://mothertobaby.org/ongoing-study/fasenra/>.

#### **7.1.2 Breast-feeding**

There are no data regarding the presence of FASENRA in human breast milk, the effects on the breastfed infant, or the effects on milk production. A decision must be made whether to discontinue breast-feeding or to discontinue/abstain from benralizumab therapy taking into account the benefit of breast-feeding for the infant and the benefit of therapy for the mother.

#### **7.1.3 Pediatrics**

**Pediatrics (< 18 years of age):** FASENRA is not indicated for use in the pediatric population as the efficacy and safety of FASENRA has not been established in patients 12 to 18 years of age (see CLINICAL TRIALS). Limited number of adolescent subjects (N=108) were enrolled in the FASENRA pivotal asthma exacerbation studies. No studies have been conducted in children below 12 years of age.

#### **7.1.4 Geriatrics**

**Geriatrics (≥ 65 years of age):** Of the total number of patients in clinical trials of benralizumab, 13% were 65 years of age and older, while 0.4% were 75 years of age and older. No overall differences in efficacy or safety were observed between these patients and adult patients. Sensitivity of some older individuals, however, cannot be excluded.

## **8 ADVERSE REACTIONS**

### **8.1 Adverse Reaction Overview**

In clinical studies that included patients with severe asthma with an eosinophilic phenotype, the most commonly reported adverse reactions during treatment were headache, pharyngitis, pyrexia, and hypersensitivity reactions.

Hypersensitivity reactions may occur within hours or days of being treated with FASENRA (benralizumab injection), including swelling of the face, mouth, and tongue; fainting, dizziness, or light-headedness; hives; breathing problems; and rash.

### **8.2 Clinical Trial Adverse Reactions**

Because clinical trials are conducted under very specific conditions, the adverse reaction rates observed in the clinical trials may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse reaction information from clinical trials is useful for identifying drug-related adverse events and for approximating rates.

Across three phase 3 studies (SIROCCO, CALIMA, and ZONDA), 1,808 patients received at least 1 dose of FASENRA (see CLINICAL TRIALS). These data described below reflect exposure to FASENRA in 1,663 patients with severe asthma, including 1,556 exposed for at



least 24 weeks and 1,387 exposed for at least 48 weeks. The safety exposure for FASENRA is derived from phase 3 placebo-controlled studies (SIROCCO and CALIMA) from 48 weeks duration [FASENRA every 4 weeks (n = 841), FASENRA every 4 weeks for 3 doses, then every 8 weeks (n = 822), and placebo (n = 847)]. While a dosing regimen of FASENRA every 4 weeks was included in clinical trials, FASENRA administered every 4 weeks for 3 doses, then every 8 weeks thereafter is the recommended dose (see DOSAGE AND ADMINISTRATION).

Adverse events that occurred at greater than or equal to 1% incidence are shown in Table 2.

**Table 2 Adverse events with ≥1% incidence with FASENRA and ≥1% more common with FASENRA than placebo in patients with severe eosinophilic asthma (SIROCCO and CALIMA)**

	<b>FASENRA n=822 n (%)</b>	<b>Placebo n=847 n (%)</b>
<b>General disorders and administration site conditions</b>		
Pyrexia	23 (3%)	13 (2%)
<b>Infections &amp; Infestations</b>		
Pharyngitis	33 (4%)	21 (2%)
<b>Musculoskeletal and connective tissue disorders</b>		
Arthralgia	30 (4%)	19 (2%)
Myalgia	16 (2%)	7 (1%)
<b>Nervous system disorders</b>		
Headache	68 (8%)	52 (6%)
<b>Respiratory, thoracic and mediastinal disorders</b>		
Cough	27 (3%)	17 (2%)

**Immunogenicity:** Treatment with FASENRA, like other monoclonal antibodies, may result in an anti-drug antibody (ADA) response (see ACTION AND CLINICAL PHARMACOLOGY, Immunogenicity). However, there is no apparent correlation of ADA development to efficacy or adverse events.

**Phase 3 oral corticosteroid-reduction trial (ZONDA)**

In ZONDA, 73 patients were treated with at least one dose of FASENRA, as per the recommended dosing regimen, while taking a daily oral corticosteroid (OCS) (7.5 to 40mg per day) in addition to regular use of high-dose ICS and LABA. Numerically higher incidence of headache and pyrexia were reported in this treatment group when compared to placebo. The frequencies for the remaining adverse reactions with FASENRA were similar to placebo. The safety results in ZONDA were similar to those observed in SIROCCO and CALIMA.

Adverse drug reactions (events considered to be possibly related to treatment with benralizumab) were identified following evaluation of all data from two randomized placebo controlled trials and include headache, pharyngitis (Pharyngitis was defined by the following grouped preferred terms: 'Pharyngitis', 'Pharyngitis bacterial', 'Viral pharyngitis', 'Pharyngitis streptococcal'), pyrexia, hypersensitivity reactions (Hypersensitivity Reactions were defined by the following grouped preferred terms: 'Urticaria', 'Urticaria papular', and 'Rash') and injection site reactions (all common;  $\geq 1/100$  to  $< 1/10$ ).

### **Less Common Clinical Trial Adverse Events**

In addition to the events shown in Table 2, adverse events reported less commonly (defined as less than 1% in the FASENRA Q8W treatment group) in SIROCCO and CALIMA that were reported in 2 or more patients receiving FASENRA Q8W compared to no reports in patients receiving placebo are summarized below.

**Blood and lymphatic system disorders:** leukopenia, lymphadenopathy

**Cardiac disorders:** atrial fibrillation

**Endocrine disorders:** adrenal insufficiency

**Eye disorders:** conjunctival haemorrhage, eye haemorrhage

**Gastrointestinal disorders:** abdominal distension

**General disorders and administration site conditions:** chest pain, chills, feeling cold, hyperpyrexia, hyperthermia, injection site papule, pain

**Hepatobiliary disorders:** cholecystitis

**Immune system disorders:** food allergy

**Infections and infestations:** appendicitis, gingivitis, viral sinusitis

**Injury, poisoning and procedural complications:** arthropod bite, arthropod sting, eye injury, meniscus injury, stab wound

**Investigations:** bacterial test positive, blood alkaline phosphatase increased

**Musculoskeletal and connective tissue disorders:** arthritis, exostosis

**Nervous system disorders:** neuralgia

**Psychiatric disorders:** nervousness, panic attack, sleep disorder

**Renal and urinary disorders:** haematuria

**Reproductive system and breast disorders:** dysmenorrhea, ovarian cyst, pelvic pain, uterine polyp

**Respiratory, thoracic and mediastinal disorders:** nasal turbinate hypertrophy, respiratory tract inflammation

**Skin and subcutaneous tissue disorders:** dermatitis allergic

**Vascular disorders:** essential hypertension, haematoma, hypotension, lymphoedema, orthostatic hypotension, peripheral coldness

### **Safety Extension Trial (BORA)**

In a select subset of patients with severe eosinophilic asthma, who were tolerant to FASENRA, and entered the 56 week duration, single-blind, uncontrolled, extension trial BORA (n = 440), the safety profile of FASENRA was consistent with that observed in the placebo-controlled studies.

## **8.3 Post-Market Adverse Reactions**

The following additional adverse reactions have been identified during post approval use of FASENRA.

**Immune system disorders:** Anaphylaxis (e.g. anaphylactic reaction, angioedema).

## **9 DRUG INTERACTIONS**

### **9.1 Overview**

Cytochrome P450 enzymes, efflux pumps and protein-binding mechanisms are not involved in the clearance of benralizumab. There is no evidence of IL-5R $\alpha$  expression on hepatocytes and eosinophil depletion does not produce chronic systemic alterations of proinflammatory cytokines.

### **9.2 Drug-Drug Interactions**

No formal drug-drug interaction studies have been conducted.

An effect of benralizumab on the pharmacokinetics of co-administered medications is not expected. Based on the population analysis, commonly co-administered medications had no effect on benralizumab clearance in patients with asthma.

### **9.3 Drug-Food Interactions**

FASENRA is administered as a subcutaneous injection. Interactions with food are therefore not applicable.

### **9.4 Drug-Herb Interactions**

No formal drug-herb interaction studies have been conducted.

## 9.5 Drug-Laboratory Test Interactions

No formal drug-laboratory test interaction studies have been conducted.

## 10 ACTION AND CLINICAL PHARMACOLOGY

### 10.1 Mechanism of Action

FASENRA (benralizumab injection) is a targeted, humanized afucosylated, monoclonal antibody (IgG1, kappa) that binds to the alpha subunit of the human interleukin-5 receptor (IL-5R $\alpha$ ) with a dissociation constant of 16 pM. The IL-5 receptor is expressed on the surface of eosinophils and basophils. The results of *in vitro* studies have also shown that the absence of fucose in the Fc domain of benralizumab results in higher affinity (45.5 nM) for Fc $\gamma$ RIII receptors, which are expressed on immune effectors cells such as natural killer cells. *In vitro*, benralizumab induces apoptosis of eosinophils and basophils through enhanced antibody-dependent cell-mediated cytotoxicity (ADCC).

Inflammation is an important component in the pathogenesis of asthma. Eosinophils and other cell types (e.g., mast cells, neutrophils, macrophages, lymphocytes) and mediators (e.g., histamine, eicosanoids, leukotrienes, cytokines) are involved in inflammation in asthma. Benralizumab reduces eosinophilic inflammation through enhanced ADCC; however, the exact mechanism of benralizumab action in asthma has not been definitively established.

### 10.2 Pharmacodynamics

Dose-dependent reductions in blood eosinophils were observed following SC administration of benralizumab in asthma patients. In a 52-week Phase 2 dose-ranging trial, asthma patients received 1 of 3 doses of benralizumab [2 mg (n=81), 20 mg (n=81), or 100 mg (n=222)] administered every 4 weeks for the first 3 doses followed by every 8 weeks thereafter or placebo (n=222). At the time of the last dose (Week 40), median blood eosinophil counts were 170/mcL, 100/mcL, 50/mcL, and 40/mcL for placebo, 2, 20, and 100 mg benralizumab groups, respectively, reduced by 11%, 68%, 82% and 79% from the baseline levels.

A reduction in blood eosinophil counts was observed 24 hours post dosing in a Phase 2 trial.

In the phase 3 exacerbation trials, SIROCCO and CALIMA, following SC administration of benralizumab at the recommended dose, blood eosinophils were reduced to a median absolute blood eosinophil count of 0 cells/mcL, which corresponds to a median reduction of 100% (see CLINICAL TRIALS). This near complete depletion of blood eosinophils was seen at the first observed time point, 4 weeks of treatment, and was sustained throughout the treatment period for both the greater than or equal to 300/mcL and less than 300/mcL baseline blood eosinophil count cohorts. Maintenance of near complete eosinophil depletion was observed throughout the 56-week extension study (BORA) consistent with previous trials.

Treatment with benralizumab was also associated with reductions in blood basophils. In the Phase 2 dose-ranging trial, at 52 weeks (12 weeks after the last dose), median blood basophil counts were changed to 42, 18, 17, and 46 cells/mcL in the 2 mg, 20 mg and 100 mg benralizumab and placebo groups, respectively, compared to the baseline levels 45, 52, 46, and 40 cells/mcL in the 2 mg, 20 mg and 100 mg benralizumab and placebo groups.

### Immunogenicity

Overall, treatment-emergent anti-drug antibody response developed in 107 out of 809 (13%) patients treated with FASENRA at the recommended dosing regimen during the Phase 3 placebo-controlled 48 to 56 week treatment period. A total of 12% (94 out of 809) of patients treated with FASENRA developed neutralizing antibodies. Anti-benralizumab antibodies were associated with increased clearance of benralizumab and increased blood eosinophil levels in patients with high anti-drug antibody titers compared to antibody negative patients. No evidence of an association of anti-drug antibodies with efficacy or safety was observed.

In a select subset of patients with severe eosinophilic asthma, who were tolerant to FASENRA, and entered the 56 week duration, single-blind, uncontrolled, extension trial BORA, an additional 18/510 (4%) had newly-developed treatment-emergent antibodies. In patients who were anti-drug antibody positive in the predecessor trials, antibody titers remained stable in the second year of treatment. Consistent with the predecessor trials, no evidence of an association of anti-drug antibodies with safety was observed.

The data reflect the percentage of patients whose test results were positive for antibodies to benralizumab in specific assays. The observed incidence of antibody response is highly dependent on several factors, including assay sensitivity and specificity, assay methodology, sample handling, timing of sample collection, concomitant medication, and underlying disease. For these reasons, comparison of the incidence of antibodies to benralizumab with the incidence of antibodies to other products may be misleading.

### 10.3 Pharmacokinetics

The pharmacokinetics of benralizumab was approximately dose-proportional in patients with asthma following subcutaneous administration over a dose range of 20 to 200 mg.

**Absorption:** Following subcutaneous administration to patients with asthma, the absorption half-life was approximately 3.5 days. Based on population pharmacokinetic analysis, the estimated absolute bioavailability was approximately 59% and there was no clinically relevant difference in relative bioavailability in the administration to the abdomen, thigh, or arm.

**Distribution:** Based on population pharmacokinetic analysis, central and peripheral volume of distribution of benralizumab was 3.1 L and 2.5 L, respectively, for a 70 kg individual.

**Metabolism:** Benralizumab is a humanized IgG1 monoclonal antibody that is degraded by proteolytic enzymes widely distributed in the body and not restricted to hepatic tissue.

**Elimination:** From population pharmacokinetic analysis, benralizumab exhibited linear pharmacokinetics and no evidence of target receptor-mediated clearance pathway. The estimated systemic clearance (CL) for benralizumab was 0.29 L/d. Following subcutaneous administration, the elimination half-life was approximately 15.5 days.

### Special Populations and Conditions

**Pediatrics (< 18 years of age):** Based on the population pharmacokinetic analysis, age did not affect benralizumab clearance.

**Geriatrics (≥ 65 years of age):** Based on population pharmacokinetic analysis, age did not affect benralizumab clearance.

**Race or Gender:** A population pharmacokinetics analysis indicated that there was no significant effect of race and gender on benralizumab clearance.

**Renal impairment:** No formal clinical studies have been conducted to investigate the effect of renal impairment on benralizumab. Based on population pharmacokinetic analysis, benralizumab clearance was comparable in subjects with creatinine clearance values between 30 and 80 mL/min and patients with normal renal function. There are limited data available in subjects with creatinine clearance values less than 30 mL/min; however, benralizumab is not cleared renally.

**Hepatic impairment:** No formal clinical studies have been conducted to investigate the effect of hepatic impairment on benralizumab. IgG monoclonal antibodies are not primarily cleared via hepatic pathway; change in hepatic function is not expected to influence benralizumab clearance. Based on population pharmacokinetic analysis, baseline hepatic function biomarkers (ALT, AST, and bilirubin) had no clinically relevant effect on benralizumab clearance.

## **11 STORAGE, STABILITY AND DISPOSAL**

Store in a refrigerator (2°C - 8°C). FASENRA (benralizumab injection) may be kept at room temperature up to 25°C for a maximum of 14 days. After removal from the refrigerator, FASENRA must be used within 14 days or discarded. Store the FASENRA PEN or prefilled syringe in the original package in order to protect from light. Do not freeze. Do not expose to heat. Discard unused drug into sharps container. Do not use this medicine after the expiry date that is stated on the label; the expiry date refers to the last day of the stated month.

## **12 SPECIAL HANDLING INSTRUCTIONS**

Do not shake. Do not use if frozen.

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

## PART II: SCIENTIFIC INFORMATION

### 13 PHARMACEUTICAL INFORMATION

#### Drug Substance

Proper name: Benralizumab

Chemical name: Immunoglobulin G1, anti-(human interleukin 5 receptor  $\alpha$ -chain) (human-mouse monoclonal MEDI-563 heavy chain), disulfide with human-mouse monoclonal MEDI-563  $\alpha$ -chain, dimer

Molecular formula and molecular mass: Benralizumab is comprised of two heavy chains and two light chains with an overall molecular weight of approximately 150 kDa.

Structural formula: Benralizumab is a recombinant humanized afucosylated IgG1k monoclonal antibody of approximately 150 kDa, including oligosaccharides. The antibody is composed of two identical heavy chains of approximately 49,400 Da each, and two identical light chains of approximately 23,500 Da each. Benralizumab has primarily N-linked biantennary complex-type oligosaccharides attached to each heavy chain at Asn-301, without fucose. The average size of the oligosaccharide moiety is approximately 1,500 Da per heavy chain.

Physicochemical properties: Benralizumab has an isoelectric point (pI) of 8.4-8.9, density of 1.071 g/mL, and an extinction coefficient (determined experimentally) of  $1.43 \text{ (mg/mL)}^{-1}\text{cm}^{-1}$ .

#### Product Characteristics

FASENRA (benralizumab injection) is a targeted, humanized monoclonal antibody (IgG1, kappa) that selectively binds to the alpha subunit of the human interleukin-5 receptor (IL-5R $\alpha$ ) with a low dissociation constant. Benralizumab is produced in Chinese hamster ovary cells by recombinant DNA technology.

FASENRA is a sterile, preservative-free, clear to opalescent, colourless to yellow solution for subcutaneous injection. Since FASENRA is a protein, translucent or white to off-white particles may be present in the solution. Each single-dose, single use prefilled syringe contains 30 mg benralizumab in 1 mL. Each single-dose, single use autoinjector contains 30 mg benralizumab in 1 mL.

## 14 CLINICAL TRIALS

### 14.1 Trial Design and Study Demographics

**Table 3 Summary of patient demographics for phase 3 clinical trials in asthma**

Study #	Trial design	Dosage, route of administration and duration	Study subjects (n)	Mean age (Range)	Sex n (%)
D3250C00017 (SIROCCO)	Multicentre, randomized, double-blind, parallel group, placebo controlled study of the efficacy and safety of benralizumab in patients with severe, uncontrolled asthma	FASENRA 30 mg SC  Placebo  2 dosing regimens:  Q4W throughout the treatment period, Q4W for the first 3 doses and then Q8W thereafter.  48 weeks	Q4W: 399 Q8W: 398  Placebo: 407  Total: 1204	49 years (12-75)	Female: 796 (66%)  Male: 408 (34%)
D3250C00018 (CALIMA)	Multicentre, randomized, double-blind, parallel group, placebo controlled study of the efficacy and safety of benralizumab in patients with severe, uncontrolled asthma	FASENRA 30 mg SC  Placebo  2 dosing regimens:  Q4W throughout the treatment period, Q4W for the first 3 doses and then Q8W thereafter  56 weeks	Q4W: 425 Q8W: 441  Placebo: 440  Total: 1306	49 years (12-75)	Female: 807 (62%)  Male: 499 (38%)
D3250C00020 (ZONDA)	Multicentre, randomized, double-blind, parallel group, placebo controlled study of the efficacy and safety of benralizumab to reduce oral corticosteroid use in patients with uncontrolled asthma	FASENRA 30 mg SC  Placebo  2 dosing regimens:  Q4W throughout the treatment period, Q4W for the first 3 doses and then Q8W thereafter  28 weeks	Q4W: 72 Q8W: 73  Placebo: 75  Total: 220	51 years (20-75)	Female: 135 (61%)  Male: 85 (39%)

SC: subcutaneous

#### Study demographics and trial design

FASENRA (benralizumab injection) was developed for the treatment of patients with severe asthma with an eosinophilic phenotype; therefore, the clinical development program was designed to study the ability of benralizumab to reduce the annual rate of asthma



exacerbations, improve lung function, reduce asthma symptoms, and reduce oral corticosteroid (OCS) use in patients across a wide range of baseline peripheral blood eosinophil levels.

The safety and efficacy of FASENRA as an add-on therapy in patients with uncontrolled asthma were evaluated in 3 randomized, double-blind, parallel-group, placebo-controlled clinical trials:

- Two replicate long-term exacerbation trials in adults and adolescents (12 years and older) with 48 and 56 weeks duration (SIROCCO and CALIMA, respectively); and
- One 28-week OCS reduction trial in adults (18 years and over) (ZONDA).

While two dosing regimens were studied in the three trials, the recommended dosing regimen is FASENRA administered every 4 weeks for the first 3 doses, and then every 8 weeks (Q8W) thereafter (see DOSAGE AND ADMINISTRATION). Only results from the recommended dosing regimen of FASENRA (i.e., Q8W) and placebo will be discussed.

A total of 805, 881 and 148 patients were randomized to treatment with FASENRA Q8W and placebo in SIROCCO, CALIMA and ZONDA, respectively (see Table 3). This included 84 adolescents (SIROCCO/CALIMA combined; 38 within the FASENRA Q8W arms and 46 within the placebo arms).

#### SIROCCO and CALIMA

The two exacerbation trials, SIROCCO and CALIMA, were 48 and 56 weeks in duration, respectively, and randomized a total of 2510 patients (adults and adolescents aged 12 years and older) with uncontrolled asthma. Patients were required to have a history of 2 or more asthma exacerbations requiring oral or systemic corticosteroid treatment in the past 12 months, Asthma Control Questionnaire (ACQ)-6 score of 1.5 or greater at screening, and reduced lung function at baseline [pre-bronchodilator forced expiratory volume in 1 second (FEV<sub>1</sub>) below 80% in adults, and below 90% in adolescents] despite regular treatment with high-dose (> 500 mcg fluticasone propionate equivalent) inhaled corticosteroids (ICS) (SIROCCO) or with medium- (500 mcg fluticasone propionate equivalent) or high-dose ICS (CALIMA) and their current standard of care. Patients were stratified by geography, age, and blood eosinophils count (greater than or equal to 300 cells/mcL or less than 300 cells/mcL). Subjects were enrolled in SIROCCO and CALIMA irrespective of baseline blood eosinophils levels; however, they were stratified in a 2:1 ratio according to high- (greater than or equal to 300 cells/mcL) and low- (less than 300 cells/mcL) eosinophil strata, respectively. The stratification was intended as a means of enriching the sample population for patients suggested most likely to respond to benralizumab, while accommodating subjects below this threshold in order to assess efficacy across a full range of baseline blood eosinophil levels.

The primary efficacy (intent-to-treat [ITT]) population consisted of patients with a baseline blood eosinophil count of greater than or equal to 300 cells/mcL who were taking high-dose ICS and LABA. Pre-specified efficacy analyses were also conducted in patients with baseline blood eosinophils of less than 300 cells/mcL; however, these analyses were considered to be supportive as they were not controlled for multiplicity. The primary endpoint for both studies was the annual asthma exacerbation rate ratio versus placebo within the primary efficacy (ITT) population. Key secondary endpoints were FEV<sub>1</sub> and ACQ-6.

#### ZONDA

For the 28-week oral corticosteroid reduction trial, a total of 220 asthma patients were enrolled who were being treated with daily OCS (7.5 to 40 mg per day) in addition to regular use of high-dose ICS and LABA with or without additional controller(s) to maintain asthma control. The trial included an 8 week run-in period during which the OCS was titrated to the minimum effective

dose without losing asthma control. Patients were required to have blood eosinophil counts greater than or equal to 150 cells/mcL and a history of at least one exacerbation in the past 12 months.

The primary endpoint was percent reduction from baseline of the final OCS dose during Weeks 24 to 28, while maintaining asthma control.

**Table 4 Demographics and Baseline Characteristics of Asthma Trials including ITT population**

	Total Population			High Dose ICS and $\geq 300$ cells/mcL*	
	SIROCCO (N=1204)	CALIMA (N=1306)	ZONDA (N=220)	SIROCCO (n=809)	CALIMA (n=728)
Mean age (yr)	49	49	51	49	49
Female (%)	66	62	61	65	61
Caucasian (%)	73	84	93	71	86
Duration of asthma, median (yr)	15	16	12	14	16
Never smoked (%)	80	78	79	81	77
Mean baseline FEV <sub>1</sub> pre-bronchodilator (L)	1.67	1.76	1.85	1.66	1.78
Mean baseline % predicted FEV <sub>1</sub>	57	58	60	56	58
Median number of exacerbations in previous year	2	2	2	2	2
Mean baseline ACQ-6	2.8	2.7	2.6	2.8	2.8

\*Intent to treat population

## 14.2 Study Results

### Baseline blood eosinophils greater than or equal to 300 cells/mcL: Exacerbations

The primary endpoint for SIROCCO and CALIMA was the rate of clinically significant asthma exacerbations in patients with baseline blood eosinophil counts of greater than or equal to 300 cells/mcL who were taking high-dose ICS and LABA. Clinically significant asthma exacerbation was defined as worsening of asthma requiring use of oral/systemic corticosteroids for at least 3 days, and/or emergency department visits requiring use of oral/systemic corticosteroids and/or hospitalization. For patients on maintenance oral corticosteroids, a clinically significant asthma exacerbation requiring oral corticosteroids was defined as a temporary increase in stable oral/systemic corticosteroids for at least 3 days or a single depo-injectable dose of corticosteroids.

In SIROCCO, 35% of patients receiving FASENRA experienced a clinically significant exacerbation compared to 51% on placebo. FASENRA significantly reduced the annual asthma

exacerbation rate compared to placebo by 51% (rate ratio: 0.49 [95% CI: 0.37, 0.64]; p<0.001) (Table 5). In CALIMA, 40% of patients receiving FASENRA experienced a clinically significant exacerbation compared to 51% on placebo. FASENRA significantly reduced the annual asthma exacerbation rate compared to placebo by 28% (rate ratio: 0.72 [95% CI: 0.54, 0.95]; p=0.019) (Table 6).

**Table 5 Rate of Clinically Significant Exacerbations, SIROCCO (ITT Population) <sup>a,b</sup>**

Treatment	Exacerbations per year			
	Rate	Difference	Rate Ratio (95% CI) <sup>c</sup>	p-value
<b>Clinically significant exacerbations</b>				
FASENRA (n=267)	0.74	-0.78	0.49 (0.37, 0.64)	<0.001
Placebo (n=267)	1.52	--	--	--
<b>Exacerbations requiring hospitalization/emergency room visit</b>				
FASENRA (n=267)	0.09	-0.16	0.37 (0.20, 0.67)	<0.001 <sup>d</sup>
Placebo (n=267)	0.25	--	--	--

- Baseline blood eosinophil counts of greater than or equal to 300 cells/mcL and taking high-dose ICS
- Statistical analysis model: a negative binomial model including covariates treatment group, region, exacerbations in the previous year, and use of maintenance oral corticosteroids.
- Annual Asthma Exacerbation Rate Ratio over 48 weeks.
- p-value was not controlled for multiplicity.

**Table 6 Rate of Clinically Significant Exacerbations, CALIMA (ITT Population) <sup>a,b</sup>**

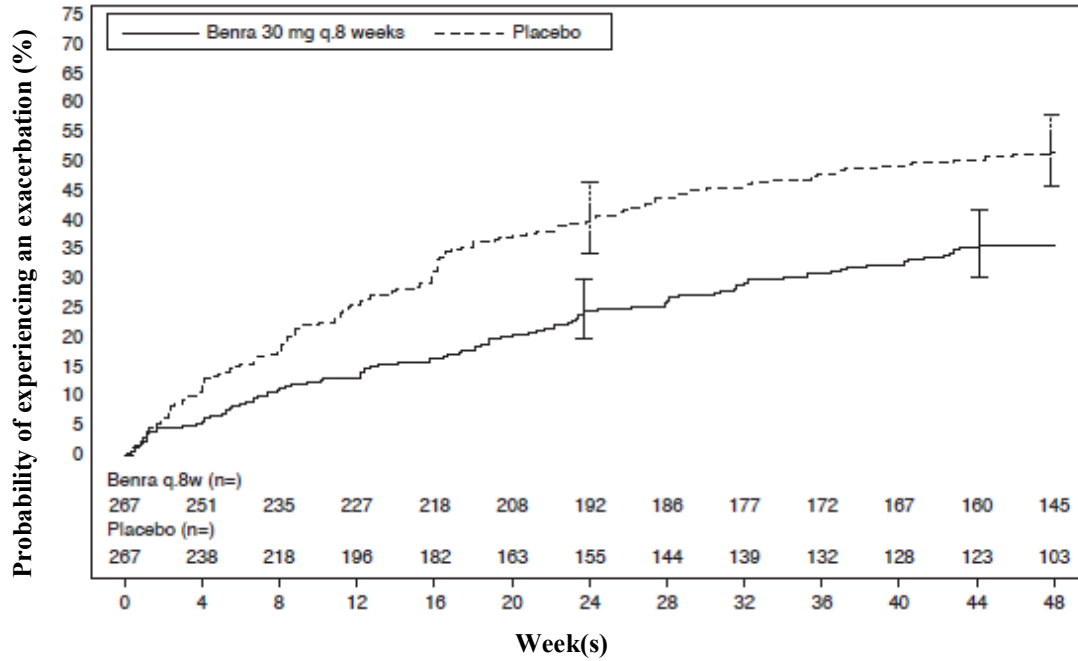
Treatment	Exacerbations per year			
	Rate	Difference	Rate Ratio (95% CI) <sup>c</sup>	p-value
<b>Clinically significant exacerbations</b>				
FASENRA (n=239)	0.73	-0.29	0.72 (0.54, 0.95)	0.019
Placebo (n=248)	1.01	--	--	--
<b>Exacerbations requiring hospitalization/emergency room visit</b>				
FASENRA (n=239)	0.12	0.02	1.23 (0.64, 2.35)	0.538 <sup>d</sup>
Placebo (n=248)	0.10	--	--	--

- Baseline blood eosinophil counts of greater than or equal to 300 cells/mcL and taking high-dose ICS
- Statistical analysis model: a negative binomial model including covariates treatment group, region, exacerbations in the previous year, and use of maintenance oral corticosteroids.
- Annual Asthma Exacerbation Rate Ratio over 56 weeks.
- p-value was not controlled for multiplicity.

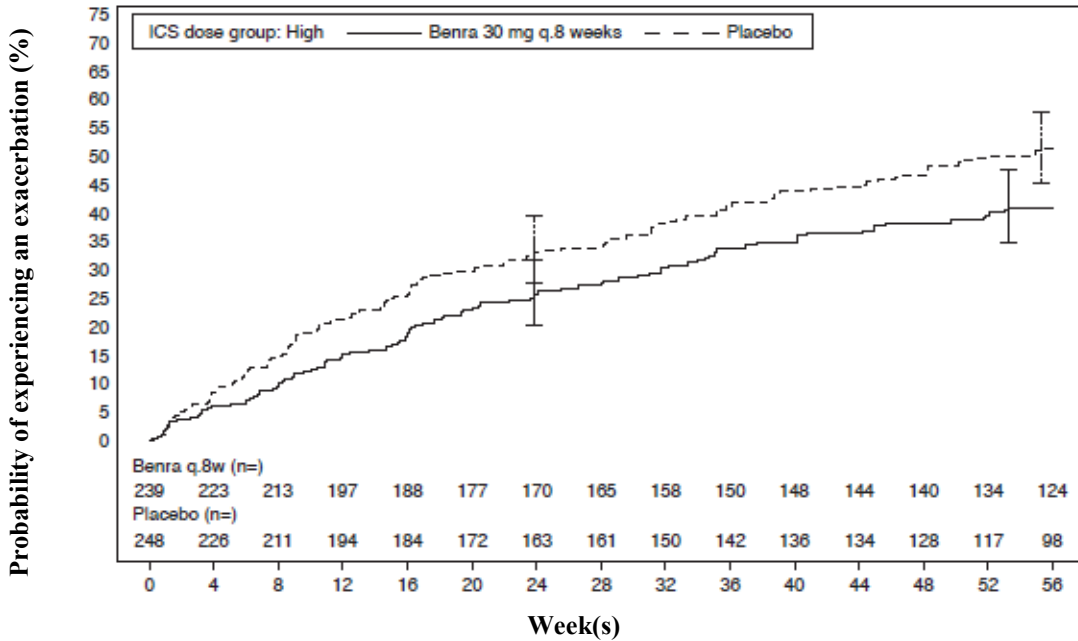
The time to first asthma exacerbation was longer for the patients receiving FASENRA compared with placebo in both trials. In SIROCCO, the risk of having an asthma exacerbation was reduced by 40% (HR [95% CI]: 0.60 [0.46, 0.78]) and in CALIMA, by 27% (HR [95% CI]: 0.73 [0.55, 0.95]) (Figure 1).

**Figure 1** Kaplan-Meier Cumulative Incidence Curves for Time to First Exacerbation, SIROCCO and CALIMA

SIROCCO



CALIMA



In SIROCCO, in patients with a history of 3 or more asthma exacerbations in the previous year, the annual asthma exacerbation rate from baseline to week 48 was 0.95 for FASENRA (n=103)

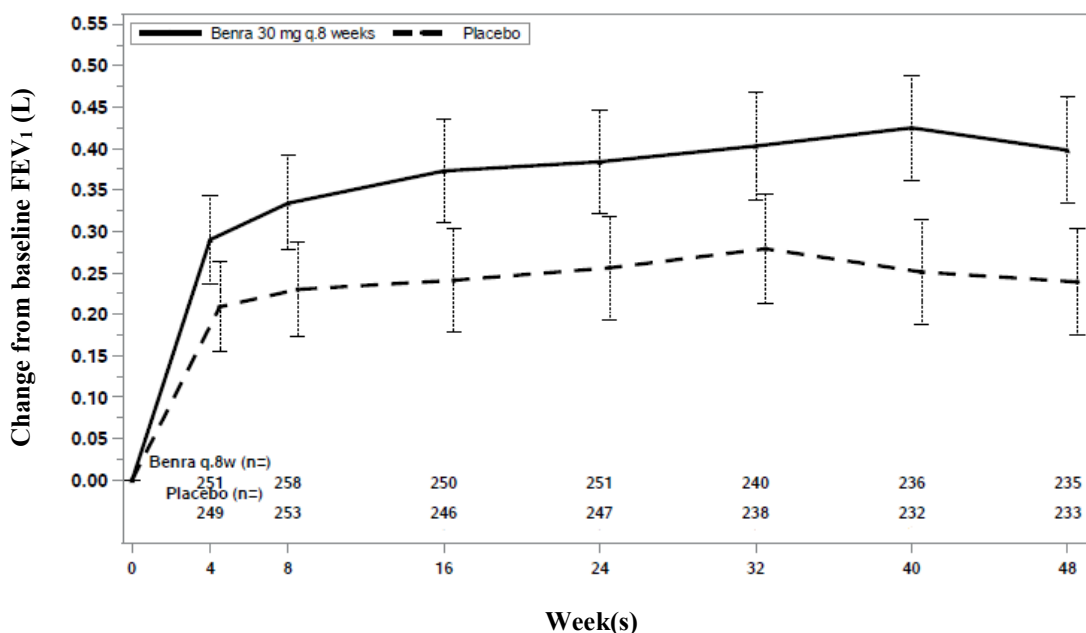
compared to 2.23 for placebo (n=118). In CALIMA, in patients with a history of 3 or more asthma exacerbations in the previous year, the annual asthma exacerbation rate from baseline to week 56 was 0.82 for FASENRA (n=95) compared to 1.65 for placebo (n=97).

### Lung Function

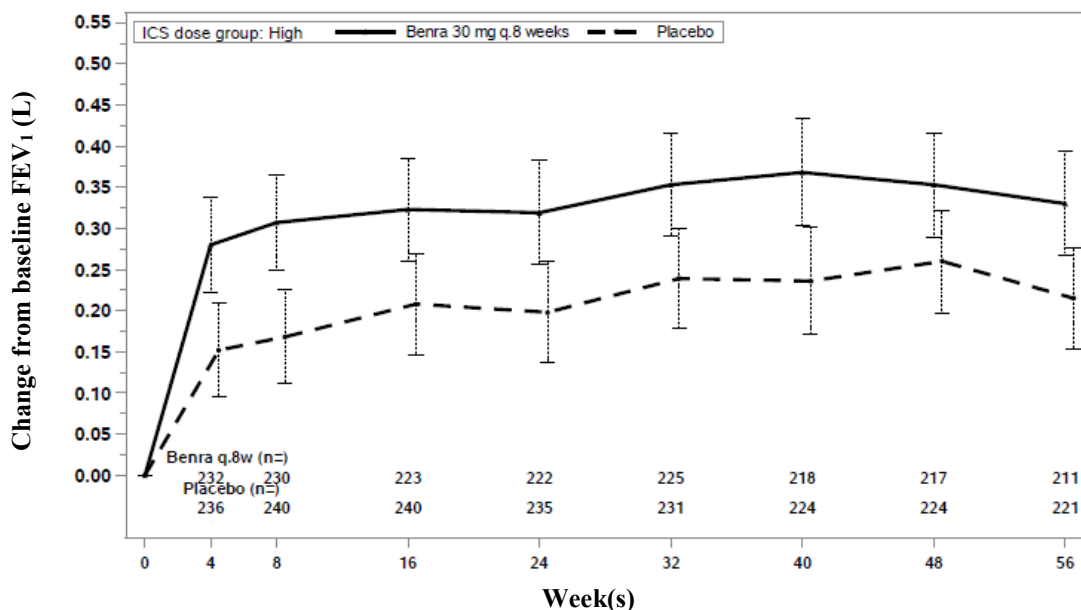
FASENRA significantly improved baseline pre-bronchodilator FEV<sub>1</sub> compared to placebo. In SIROCCO, the mean change from baseline in pre-bronchodilator FEV<sub>1</sub> was 0.159 L ([95% CI: 0.068, 0.249], p<0.001). In CALIMA, the mean change from baseline in pre-bronchodilator FEV<sub>1</sub> was 0.116 L ([95% CI: 0.028, 0.204], p<0.010). Compared with placebo, FASENRA provided consistent improvements over time in the mean change from baseline in FEV<sub>1</sub> (Figure 2).

**Figure 2 Mean Change from Baseline in Pre-Bronchodilator FEV<sub>1</sub> (L), SIROCCO and CALIMA**

#### SIROCCO



## CALIMA



### Asthma Symptoms and Quality of Life

In SIROCCO, the observed mean change from baseline to week 48 in Asthma Control Questionnaire (ACQ)-6 was -1.47 units for FASENRA compared to -1.12 units for placebo. In CALIMA, the observed mean change from baseline to week 56 was -1.49 units for FASENRA compared to -1.21 units for placebo. In SIROCCO, the observed mean change from baseline to week 48 in Standardized Asthma Quality of Life Questionnaire for 12 Years and Older (AQLQ(S)+12) was 1.56 units for FASENRA compared to 1.25 units for placebo. In CALIMA, the observed mean change from baseline to week 56 was 1.61 units for FASENRA compared to 1.32 units for placebo.

### *Baseline blood eosinophils less than 300 cells/mcL:*

In SIROCCO, in patients with baseline blood eosinophil counts less than 300 cells/mcL, the annual asthma exacerbation rate from baseline to week 48 was 1.11 for FASENRA (n=131) compared to 1.34 for placebo (n=140) (Rate Ratio = 0.83 [95% CI: 0.59, 1.16]). In CALIMA, in patients with baseline blood eosinophil counts less than 300 cells/mcL, the annual asthma exacerbation rate from baseline to week 56 was 0.83 for FASENRA (n=125) compared to 1.38 for placebo (n=122) (Rate Ratio = 0.60 [95% CI: 0.42, 0.86]).

### Oral Corticosteroid Reduction (ZONDA)

The primary endpoint in ZONDA was the percent reduction from baseline of the final OCS dose during Weeks 24 to 28, while maintaining asthma control. The median percent reduction in daily OCS dose from baseline was 75% in patients receiving recommended dose of FASENRA (95% CI: 60, 88) compared to 25% in patients receiving placebo (95% CI: 0, 33). Reductions of 50% or higher in the OCS dose were observed in 48 (66%) patients receiving FASENRA compared to 28 (37%) of those receiving placebo. The proportion of patients with a mean final dose less than or equal to 5 mg at Weeks 24 to 28 were 59% for FASENRA and 33% for placebo (odds ratio 2.74, 95% CI: 1.41, 5.31). Only patients with an optimized baseline OCS dose of 12.5 mg or less were eligible to achieve a 100% reduction in OCS dose during the study. Of those patients, 52.4% (22 of 42) receiving FASENRA and 19% (8 of 42) on placebo achieved a 100% reduction in OCS dose.

Exacerbations and time to first asthma exacerbation were also assessed as secondary endpoints. In this 28-week trial, a smaller proportion of patients receiving FASENRA (23.3%) (17 of 73) experienced  $\geq 1$  asthma exacerbation compared to placebo (52.0%) (39 of 75). A longer time to the first asthma exacerbation was also observed in patients receiving FASENRA compared to placebo.

## 15 NON-CLINICAL TOXICOLOGY

### General Toxicology

Intravenous and subcutaneous administration to sexually mature cynomolgus monkeys for up to 9 months duration at IV doses of 10 and 25 mg/kg or at an SC dose of 30 mg/kg once every 2 weeks was associated with reductions or depletion in peripheral blood and bone marrow eosinophil counts. Reductions in eosinophil counts were an expected pharmacological effect. In addition, no adverse histopathological findings were observed in the reproductive organs of male and female monkeys. Male and female reproductive parameters (testicular volume; sperm motility, concentration, count, and morphology; reproductive hormone patterns; and menstrual cycle length) were also unaffected. Benralizumab-related adverse effects were limited to clinical signs of bruising/reddened areas around the eyes and on the face, chest, and lower abdomen (petechiae and ecchymosis), as well as decreased platelet count and indicators of circulating erythrocyte mass in one animal following intravenous dosing at 25 mg/kg body weight. No other benralizumab-related adverse effects, including on the respiratory and cardiovascular systems, were observed. The no-observed-adverse-effect level (NOAEL) was, therefore, 10 mg/kg body weight every two weeks following intravenous administration and 30 mg/kg body weight every two weeks following subcutaneous administration. The safety margins based on the intravenous and subcutaneous NOAEL values are approximately 155 and 275 times, respectively, to the maximum recommended human dose (MRHD) on an AUC basis, and 136 and 193 times, respectively, to the MRHD on a  $C_{max}$  basis.

### Carcinogenicity

Long-term animal studies have not been performed to evaluate the carcinogenic potential of benralizumab.

### Reproductive and Developmental Toxicology

In a prenatal and postnatal development study conducted in cynomolgus monkeys, there was no evidence of maternal or developmental toxicity with IV administration of benralizumab throughout pregnancy and one month post-partum at maternal doses of 10 and 30 mg/kg administered every two weeks (from gestation day 20 to one month post-partum). The NOAEL was therefore the highest dose tested. The highest dose produced exposures up to approximately 319 times (on AUC basis) and 454 times (on  $C_{max}$  basis) that achieved with the MRHD. Systemic exposure to benralizumab was observed in offspring. Reduction or depletion of peripheral eosinophil counts was also observed in maternal animals and their offspring; however, the effect in infants as a result of in utero or lactational exposure is not an intended effect.

**READ THIS FOR SAFE AND EFFECTIVE USE OF YOUR MEDICINE**  
**PATIENT MEDICATION INFORMATION**

**Pr FASENRA® and Pr FASENRA PEN™  
benralizumab injection**

Read this carefully before you start taking **FASENRA** and each time you get an injection. This leaflet is a summary and will not tell you everything about this drug. Talk to your healthcare professional about your medical condition and treatment and ask if there is any new information about **FASENRA**.

**What is FASENRA used for?**

FASENRA is a prescription medicine used in addition to other asthma medicines for maintenance treatment of adult patients with severe eosinophilic asthma, whose asthma is not controlled with their current asthma medicines. Severe eosinophilic asthma is a type of asthma where patients have increased eosinophils in the blood or lungs. Eosinophils are a type of white blood cell that are associated with inflammation of the airways that can cause your asthma to get worse or can increase the number of asthma attacks.

FASENRA helps reduce the number of asthma attacks that you experience.

FASENRA is not used to treat other problems caused by eosinophils. FASENRA is not used to treat sudden breathing problems.

**How does FASENRA work?**

FASENRA contains the active substance, benralizumab, a monoclonal antibody that works by affecting white blood cells called eosinophils. Eosinophils are a type of white blood cell that may contribute to your asthma by causing inflammation in the lungs. By attaching to the eosinophils, FASENRA reduces the number of eosinophils in the blood and lungs.

**What are the ingredients in FASENRA?**

Medicinal ingredient: benralizumab

Non-medicinal ingredients: L-histidine, L-histidine hydrochloride monohydrate,  $\alpha,\alpha$ -trehalose dihydrate, polysorbate 20 and water.

**FASENRA comes in the following dosage form:**

Solution for injection.

Each single-use prefilled syringe or autoinjector contains 30 mg of benralizumab in 1 mL of solution.

**Do not use FASENRA if:**

You are allergic to benralizumab or any of the other ingredients of this medicine. Talk to your doctor about whether this may apply to you.

**To help avoid side effects and ensure proper use, talk to your healthcare professional before you take FASENRA. Talk about any health conditions or problems you may have, including if you:**

- have any symptoms of an allergic reaction, including to other medicines of this type



(monoclonal antibodies) as they can cause severe allergic reactions when injected into the body (see **What are possible side effects from using FASENRA?**). Serious allergic reactions have occurred in patients receiving FASENRA.

- have a parasitic infection or if you live in an area where parasitic infections are common or if you are travelling to such a region. FASENRA may weaken your ability to fight certain types of parasitic infections. Parasitic infections should be treated prior to starting treatment with FASENRA.
- feel that your asthma symptoms get worse when being treated with FASENRA.

#### **Other warnings you should know about:**

##### **Effects when treatment with FASENRA is stopped**

Do not stop receiving injections of FASENRA unless advised by your doctor. Interrupting or stopping the treatment with FASENRA may cause your asthma symptoms to become worse or cause an asthma attack.

##### **Other medicines for asthma**

**Do not suddenly stop** taking your other asthma medications once you have started FASENRA. These medicines (especially *corticosteroids*) must be stopped gradually, under the direct supervision of your doctor.

##### **Pregnancy and breastfeeding**

- If you are pregnant, think you may be pregnant, or are planning to become pregnant, tell your doctor before using this medicine. It is preferable to avoid the use of FASENRA during pregnancy. It is not known if FASENRA may harm your unborn baby. There is a pregnancy registry for women who are treated with FASENRA while pregnant. The purpose of the registry is to collect information about the health of you and your baby. You can talk to your healthcare provider about how to take part in this registry or you can get more information and register by calling 1-877-311-8972 or by visiting <http://mothertobaby.org/ongoing-study/fasenra/>.
- If you become pregnant while being treated with FASENRA or within 4 months of stopping treatment with FASENRA, tell your doctor right away.
- It is not known whether the ingredients of FASENRA can pass into breast milk. If you are breastfeeding or plan to breastfeed, you must tell your doctor before being treated with FASENRA.

**Tell your healthcare professional about all the medicines you take, including any drugs, vitamins, minerals, natural supplements, or alternative medicines.**

##### **How to take FASENRA:**

Always use this medicine exactly as your doctor has told you. Check with your doctor, nurse or pharmacist if you are not sure.

FASENRA is given as an injection just under the skin (subcutaneously).

You and your doctor should decide if you should inject FASENRA yourself.

You or your caregiver should receive training on the right way to prepare and inject FASENRA. Read the INSTRUCTIONS FOR USE carefully before using FASENRA. See INSTRUCTIONS FOR USE of FASENRA prefilled syringe or INSTRUCTIONS FOR USE of FASENRA

autoinjector (FASENRA PEN).

**Usual dose:**

The recommended dose is 30 mg every 4 weeks for the first 3 injections, and then every 8 weeks thereafter.

**Overdose:**

If you think you have taken too much FASENRA, contact your healthcare professional, hospital emergency department or regional poison control centre immediately, even if there are no symptoms.

**Missed Dose:**

If a dose of FASENRA is missed, contact your healthcare professional as soon as possible.

**What are possible side effects from using FASENRA?**

FASENRA can cause side effects, although not everybody will get them.

These are not all the possible side effects that you may experience when taking FASENRA. If you experience any side effects not listed here, tell your healthcare professional.

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

**Allergic Reactions**

Patients receiving FASENRA may have allergic reactions. These reactions may occur within minutes to hours after an injection, but sometimes symptoms can start several days later.

Symptoms can include:

- swelling of your face, eyelids, lips, tongue, or mouth
- difficulty breathing, very wheezy, cough, chest tightness
- fainting, dizziness, feeling lightheaded (due to a drop in blood pressure)
- hives
- rash

**Seek medication attention immediately if you think you may be having a reaction.**

Other common side effects that can occur with FASENRA include:

- headache
- sore throat
- fever
- injection site reactions (e.g., pain, redness, itching, swelling near where the injection was given)

If you have a troublesome symptom or side effect that is not listed here or becomes bad enough to interfere with your daily activities, tell your healthcare professional.

## Reporting Side Effects

You can report any suspected side effects associated with the use of health products to Health Canada by:

- Visiting the Web page on [Adverse Reaction Reporting](https://www.canada.ca/en/healthcanada/services/drugs-health-products/medeffect-canada/adverse-reactionreporting.html) (<https://www.canada.ca/en/healthcanada/services/drugs-health-products/medeffect-canada/adverse-reactionreporting.html>) for information on how to report online, by mail or by fax; or
- Calling toll-free at 1-866-234-2345.

*NOTE: Contact your health professional if you need information about how to manage your side effects. The Canada Vigilance Program does not provide medical advice.*

## Storage:

- Keep this medicine out of the sight and reach of children.
- Do not use this medicine after the expiry date that is stated on the label. The expiry date refers to the last day of the stated month.
- Store in the original package to protect from light.
- Store in a refrigerator (2°C to 8°C).
- FASENRA may be kept at room temperature up to 25°C for a maximum of 14 days. After removal from the refrigerator, FASENRA must be used within 14 days or discarded.
- Do not shake, freeze or expose to heat.

## If you want more information about FASENRA:

- Talk to your healthcare professional
- Find the full product monograph that is prepared for healthcare professionals and includes this Patient Medication Information by visiting the [Health Canada website](#); the manufacturer's website [www.astrazeneca.ca](http://www.astrazeneca.ca), or by calling 1-800-668-6000.
- This Patient Medication Information is current at the time of printing. The most up-to-date version can be found at [www.astrazeneca.ca](http://www.astrazeneca.ca).

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Last Revised: TBD

## INSTRUCTIONS FOR USE – PREFILLED SYRINGE

**Pr** FASENRA®  
benralizumab injection  
Single Use Prefilled Syringe

Before using your FASENRA prefilled syringe, your healthcare professional should show you or your caregiver how to use it correctly.

**Read this Instructions for Use before you start using your FASENRA prefilled syringe and each time you get a refill.** There may be new information. This information does not take the place of talking to your healthcare professional about your medical condition or your treatment.

If you or your caregiver have any questions, talk to your healthcare professional.

### Important information

**Store FASENRA in a refrigerator between 2°C to 8°C in its carton until you are ready to use it.** FASENRA may be kept at room temperature up to 25°C for a maximum of 14 days. After removal from the refrigerator, FASENRA must be used within 14 days or discarded.

**Do not** use your FASENRA prefilled syringe if:

- it has been frozen
- it has been dropped or damaged
- the security seal on the carton has been broken
- the expiry date (EXP) has passed

**Do not:**

- shake your prefilled syringe
- share or re-use your prefilled syringe

If any of the above happens, throw away the syringe in a puncture-resistant sharps container and use a new prefilled syringe.

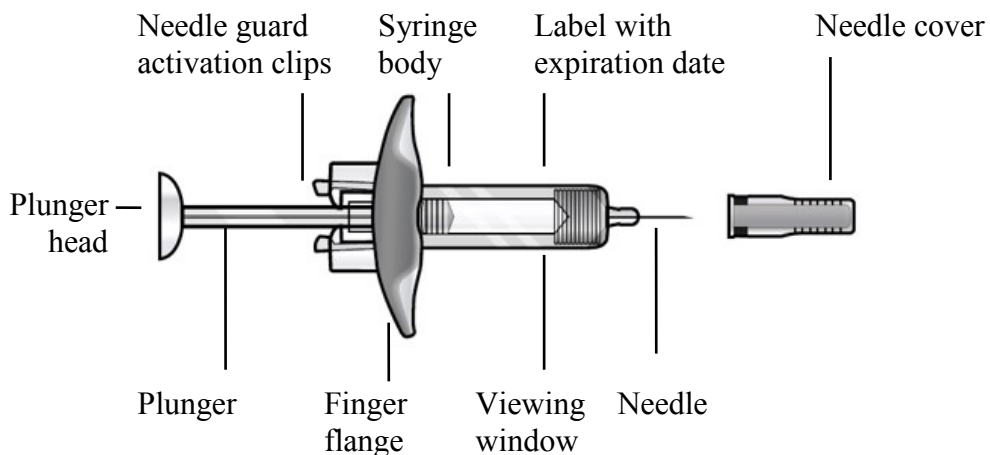
Each FASENRA prefilled syringe contains 1 dose of FASENRA that is for one-time use only.

Keep FASENRA and all medicines out of the sight and reach of children.

### Your FASENRA prefilled syringe

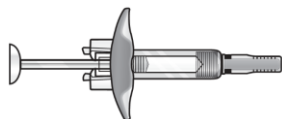
**Do not** remove the needle cover until you have reached Step 6 of these instructions and are ready to inject FASENRA.

**Do not** touch the needle guard activation clips to keep from activating the safety device (needle guard) too soon.



### Step 1 - Gather Supplies

- 1 FASENRA prefilled syringe from the refrigerator
- 1 alcohol wipe
- 1 cotton ball or gauze
- 1 puncture-resistant sharps container.  
(See Step 9 - Dispose the used prefilled syringe)



Prefilled syringe



Alcohol wipe



Cotton ball or gauze



Sharps container

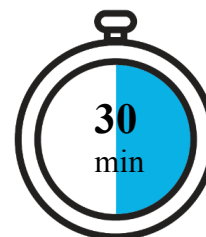
### Step 2 - Prepare to use your prefilled syringe

**Check the expiry date (EXP).** Do not use if the expiry date has passed.

**Let FASENRA warm up at room temperature 20°C to 25°C for about 30 minutes before giving the injection.**

**Do not** warm the prefilled syringe in any other way. For example, do not warm it in a microwave or hot water, or put it near other heat sources.

Use FASENRA within 14 days of removing from the refrigerator.



### Step 3 - Check the liquid

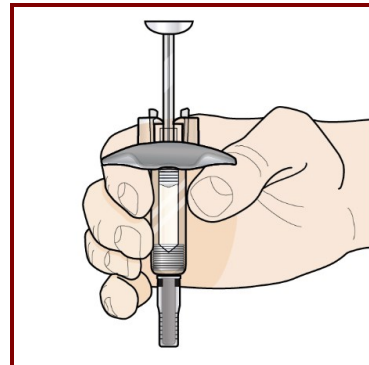
Open the carton. Peel off the entire lid from the plastic tray.

**Grasp the syringe body (not the plunger)** to remove the prefilled syringe from its tray.

**Look at the liquid through the viewing window.** The liquid should be clear and colourless to yellow. It may contain small white particles.

**Do not** inject FASENRA if the liquid is cloudy, discoloured, or contains large particles.

You may see a small air bubble in the liquid. This is normal. You do not need to do anything about it.



### Step 4 - Choose the injection site

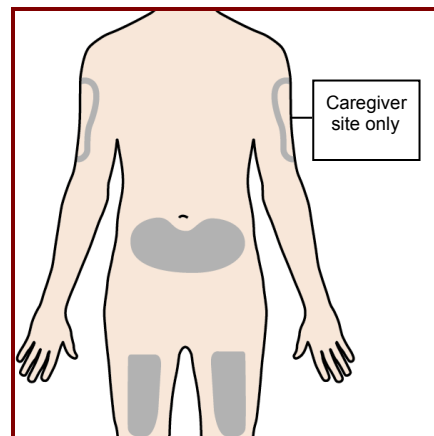
The recommended injection site is the front of your thigh. You may also use the lower part of your abdomen.

**Do not** inject:

- into the 5 cm area around your belly-button
- where the skin is tender, bruised, scaly or hard
- into scars or damaged skin
- through clothing

A caregiver may inject you in the upper-arm, thigh, or abdomen. **Do not** try to inject yourself in the arm.

For each injection, choose a different site that is at least 3 cm away from where you last injected.



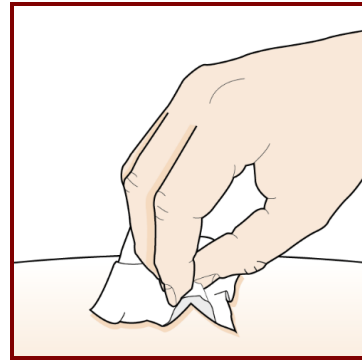
### Step 5 - Prepare the injection site

Wash your hands well with soap and water.

Clean the injection site with an alcohol wipe in a circular motion. Let it air dry.

**Do not** touch the cleaned area before injecting.

**Do not** fan or blow on the cleaned area.



### Step 6 - Pull off the needle cover

Hold the syringe body with 1 hand, and carefully pull the needle cover straight off with your other hand.

**Do not** hold the plunger or plunger head while removing the needle cover.

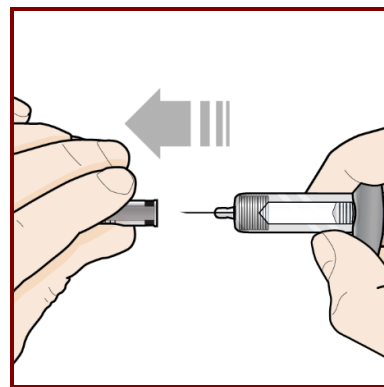
Put the needle cover aside to throw away later.

You may see a drop of liquid at the end of the needle. This is normal.

**Do not** use the syringe if it is dropped without the needle cover in place or if the needle is damaged or dirty.

**Do not** touch the needle, or let it touch any surface.

Go straight on to the next steps, without delay.



## Step 7 - Inject FASENRA

Follow your healthcare professional's instructions on how to inject.

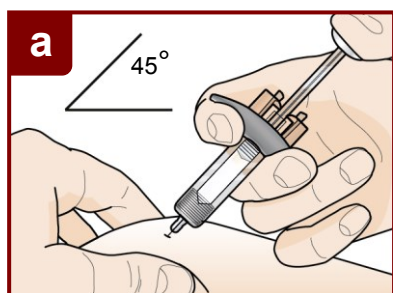
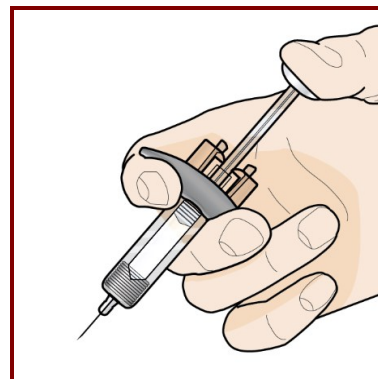
Hold the prefilled syringe in 1 hand as shown.

Use your other hand to gently pinch and hold the area of skin where you want to inject. This creates a firmer surface.

**Do not** press down on the plunger until the needle is completely inserted into the skin.

**Do not** pull back on the plunger at any time.

Inject FASENRA by following the steps in figures a, b and c.



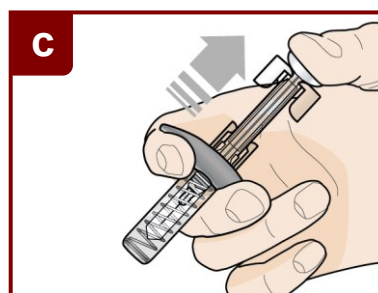
Use a quick, dart-like motion to insert the needle into the pinched skin.

Insert the needle at an angle of 45 degrees.



Use your thumb to push down on the plunger head.

Keep pushing until it is down as far as it will go. This is to make sure you inject all of the medication.



Keep your thumb pressed down on the plunger head as you take the needle out of the skin.

Slowly ease up on the plunger until the needle guard covers the needle.

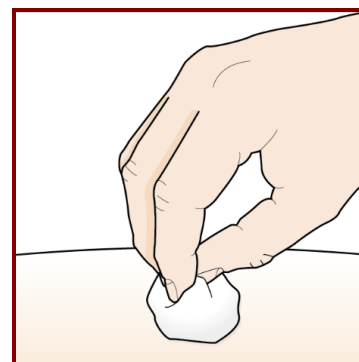
## Step 8 - Check the injection site

There may be a small amount of blood or liquid where you injected. This is normal.

Gently hold pressure over your skin with a cotton ball or gauze until the bleeding stops.

**Do not** rub the injection site.

If needed, cover the injection site with a small bandage.





### Step 9 - Dispose the used prefilled syringe

- Each prefilled syringe contains a single dose of FASENRA and **cannot be re-used**.
- Put your used prefilled syringe in a puncture-resistant **sharps container** right away after use.

**Do not** throw away the prefilled syringe in your household waste.

**Do not** re-cap the prefilled syringe.

Throw away the cap and other used supplies in your household waste.

#### Disposal guidelines

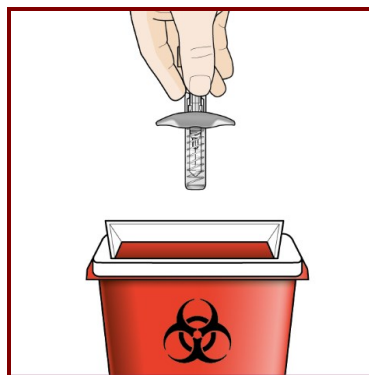
Dispose of the full container as instructed by your healthcare professional or pharmacist.

**Do not** dispose of your used sharps container in your household waste.

**Do not** recycle your used sharps container.

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## INSTRUCTIONS FOR USE - AUTOINJECTOR

**Pr** **FASENRA PEN™**  
**benralizumab injection**  
**Single Use Autoinjector**

Before using your FASENRA PEN, your healthcare professional should show you or your caregiver how to use it correctly.

**Read this Instructions for Use before you start using your FASENRA PEN and each time you get a refill.** There may be new information. This information does not take the place of talking to your healthcare professional about your medical condition or your treatment.

If you or your caregiver have any questions, talk to your healthcare professional.

### Important information

**Store FASENRA in a refrigerator between 2°C to 8°C in its carton until you are ready to use it.** FASENRA may be kept at room temperature up to 25°C for a maximum of 14 days. After removal from the refrigerator, FASENRA must be used within 14 days or discarded.

**Do not** use your FASENRA PEN if:

- it has been frozen
- it has been dropped or damaged
- the security seal on the carton has been broken
- the expiry date (EXP) has passed

**Do not:**

- shake your FASENRA PEN
- share or re-use your FASENRA PEN

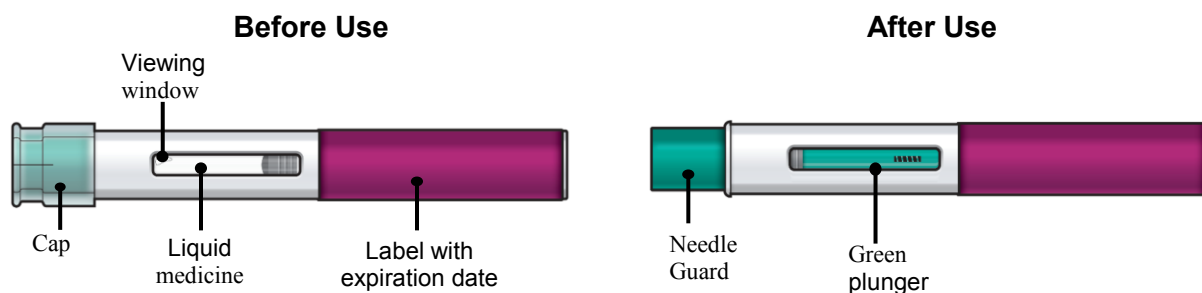
If any of the above happens, throw away the FASENRA PEN in a puncture-resistant sharps container and use a new FASENRA PEN.

Each FASENRA PEN contains 1 dose of FASENRA that is for one-time use only.

Keep FASENRA and all medicines out of the sight and reach of children.

### Your FASENRA PEN

**Do not** remove the needle cover until you have reached Step 6 of these instructions and are ready to inject FASENRA.



## Step 1 - Gather Supplies

- 1 FASENRA PEN from the refrigerator
- 1 alcohol wipe
- 1 cotton ball or gauze
- 1 puncture-resistant sharps container.  
(See Step 10 - Dispose the used FASENRA PEN safely)



FASENRA PEN



Alcohol wipe



Cotton ball or gauze



Sharps container

## Step 2 - Prepare to use your FASENRA PEN

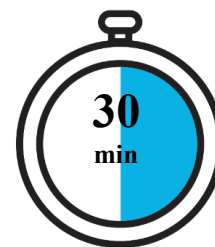
**Check the expiry date (EXP).** Do not use if the expiry date has passed.

**Let FASENRA warm up at room temperature 20°C to 25°C for about 30 minutes before giving the injection.**

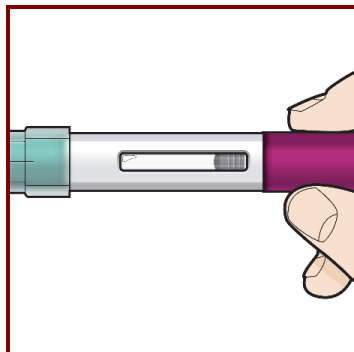
**Do not** warm the FASENRA PEN in any other way. For example, do not warm it in a microwave or hot water, or put it near other heat sources.

Use FASENRA within 14 days of removing from the refrigerator.

**Do not** remove the cap until you have reached Step 6.



### Step 3 - Check the liquid

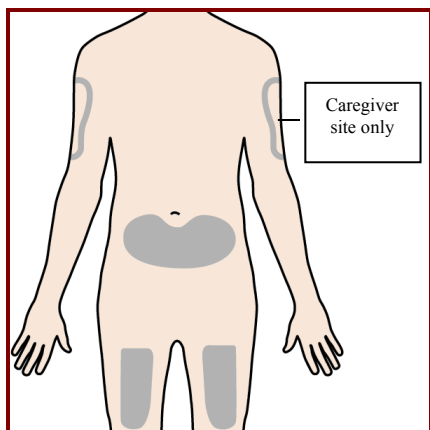


Look at the liquid in the **FASENRA PEN** through the **viewing window**. The liquid should be clear and colourless to yellow. It may contain small white particles.

**Do not** inject FASENRA if the liquid is cloudy, discoloured, or contains large particles.

You may see a small air bubble in the liquid. This is normal. You do not need to do anything about it.

### Step 4 - Choose the injection site



The recommended injection site is the front of your thigh. You may also use the lower part of your abdomen.

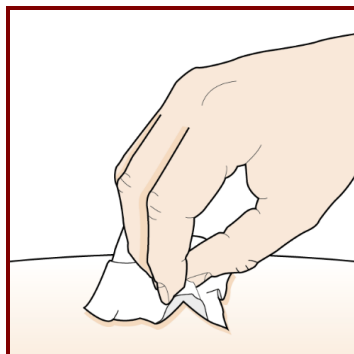
**Do not** inject:

- into the 5 cm area around your belly-button
- where the skin is tender, bruised, scaly or hard
- into scars or damaged skin
- through clothing

A caregiver may inject you in the upper-arm, thigh, or abdomen. **Do not** try to inject yourself in the arm.

For each injection, choose a different site that is at least 3 cm away from where you last injected.

### Step 5 - Prepare the injection site



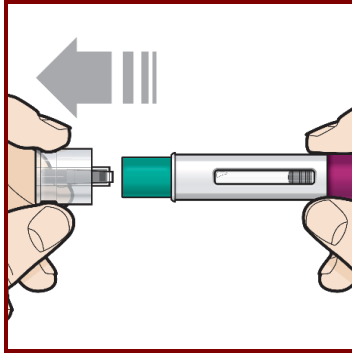
Wash your hands well with soap and water.

Clean the injection site with an alcohol wipe in a circular motion. Let it air dry.

**Do not** touch the cleaned area before injecting.

**Do not** fan or blow on the cleaned area.

## Step 6 - Pull off the cap



Hold the FASENRA PEN with 1 hand. Carefully pull the cap straight off with your other hand.

Put the cap aside to throw away later.

The green needle guard is now exposed. It is there to prevent you from touching the needle.

**Do not** try to touch the needle or push on the needle guard with your finger.

**Do not** try to put the cap back on the FASENRA PEN. You could cause the injection to happen too soon or damage the needle.

Complete the following steps right away after removing the cap.

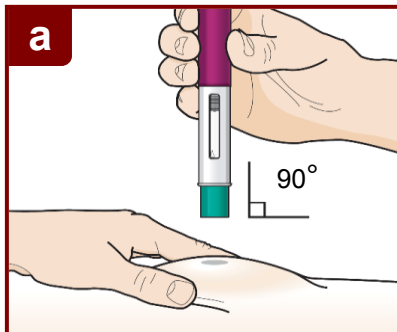
## Step 7 - Inject FASENRA

Follow your healthcare professional's instructions on how to inject. You can either gently pinch at the injection site or give the injection without pinching the skin.

Inject FASENRA by following the steps in figures **a**, **b**, **c** and **d**.

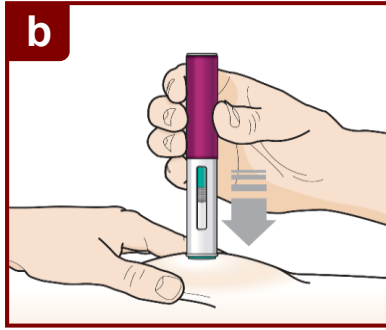
Hold the FASENRA PEN in place for the entire injection.

**Do not** change the position of the FASENRA PEN after the injection has started.



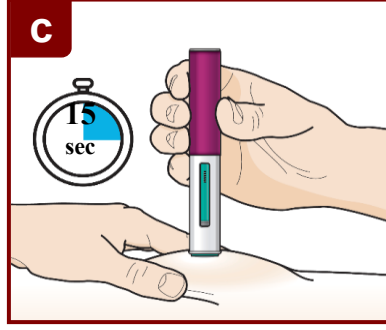
### Position the FASENRA PEN at the injection site

Place the needle guard of the FASENRA PEN flat against your skin (90-degree angle). Make sure you can see the viewing window.



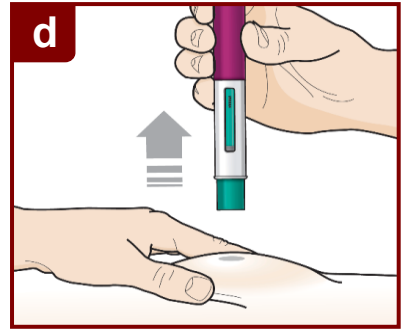
**Press down firmly.**

You will hear a click. A ‘click’ tells you the injection has started. The green plunger will move down in the viewing window during the injection.



**Hold down firmly for 15 seconds.**

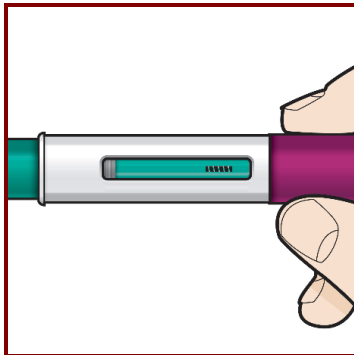
You will hear a second ‘click’. The second click tells you the injection has finished. The green plunger will fill the viewing window.



**Lift the FASENRA PEN straight up.**

The needle guard will slide down and lock into place over the needle.

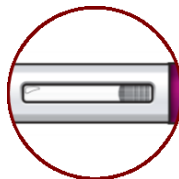
**Step 8 - Check the viewing window**



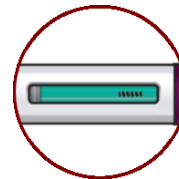
Check the viewing window to make sure all the liquid has been injected.

If the green plunger does not fill the viewing window, you may not have received the full dose. If this happens or if you have any other concerns, call your healthcare professional.

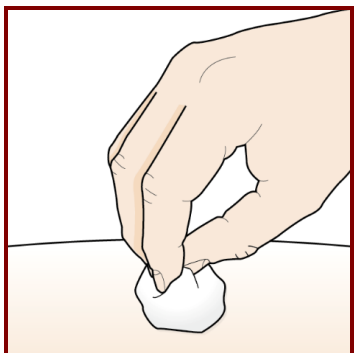
**Before Injection**



**After Injection**



**Step 9 - Check the injection site**



There may be a small amount of blood or liquid where you injected. This is normal.

Gently hold pressure over your skin with a cotton ball or gauze until the bleeding stops.

**Do not** rub the injection site.

If needed, cover the injection site with a small bandage.

## Step 10 - Dispose of the used FASENRA PEN safely



- Each FASENRA PEN contains a single dose of FASENRA and **cannot be re-used**.
- Put your used FASENRA PEN in a puncture-resistant **sharps container** right away after use.

**Do not** throw away the FASENRA PEN in your household waste.

Throw away the cap and other used supplies in your household waste.

### Disposal guidelines

Dispose of the full container as instructed by your healthcare professional or pharmacist.

**Do not** dispose of your used sharps container in your household waste.

**Do not** recycle your used sharps container.

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