# Arexvy

## 1. NAME OF THE MEDICINAL PRODUCT

Arexvy powder and suspension for suspension for injection
Respiratory Syncytial Virus (RSV) vaccine (recombinant, adjuvanted)

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

After reconstitution, one dose (0.5 mL) contains:
RSVPreF3[1] antigen[2,3] 120 micrograms

[1] Respiratory Syncytial Virus recombinant glycoprotein F stabilised in the pre-fusion conformation = RSVPreF3
[2] RSVPreF3 produced in Chinese Hamster Ovary (CHO) cells by recombinant DNA technology
[3] adjuvanted with $AS01_E$ containing:
plant extract *Quillaja saponaria* Molina, fraction 21 (QS-21) 25 micrograms
3-O-desacyl-4'-monophosphoryl lipid A (MPL) from *Salmonella minnesota* 25 micrograms

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Powder and suspension for suspension for injection.

The powder is white.
The suspension is an opalescent, colourless to pale brownish liquid.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Arexvy is indicated for active immunisation for the prevention of lower respiratory tract disease (LRTD) caused by respiratory syncytial virus in :

- adults 60 years of age and older;
- adults 50 through 59 years of age who are at increased risk for RSV disease.

The use of this vaccine should be in accordance with official recommendations.

### 4.2 Posology and method of administration

Posology

Arexvy is administered as a single dose of 0.5 mL.

The need for revaccination with a subsequent dose has not been established.

*Paediatric population*

The safety and efficacy of Arexvy in children have not been established.
No data are available.

Method of administration

For intramuscular injection only, preferably in the deltoid muscle.

For instructions on reconstitution of the medicinal product before administration, see section 6.6.

## 4.3 Contraindications

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

## 4.4 Special warnings and precautions for use

Traceability

In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

Prior to immunisation

Appropriate medical treatment and supervision should always be readily available in case of an anaphylactic event following the administration of the vaccine.

Vaccination should be postponed in individuals suffering from an acute severe febrile illness. The presence of a minor infection, such as a cold, should not result in the deferral of vaccination.

As with any vaccine, a protective immune response may not be elicited in all vaccinees.

Anxiety-related reactions, including vasovagal reactions (syncope), hyperventilation or stress-related reactions may occur in association with the vaccination process itself. It is important that precautions are in place to avoid injury from fainting.

Precautions for use

Do not administer the vaccine intravascularly or intradermally. No data are available on subcutaneous administration of Arexvy.

As with other intramuscular injections, Arexvy should be given with caution to individuals with thrombocytopenia or any coagulation disorder since bleeding may occur following intramuscular administration to these individuals.

Systemic immunosuppressive medicinal products and immunodeficiency

Safety and immunogenicity data on Arexvy are not available for immunocompromised individuals. Patients receiving immunosuppresive treatment or patients with immunodeficiency may have a reduced immune response to Arexvy.

Excipients

This medicinal product contains potassium, less than 1 mmol (39 mg) per dose, i.e. essentially 'potassium-free'.

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

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

Use with other vaccines

Arexvy may be administered concomitantly with inactivated seasonal quadrivalent influenza vaccines (standard dose unadjuvanted, high dose unadjuvanted, or standard dose adjuvanted).

If Arexvy is to be given at the same time as another injectable vaccine, the vaccines should always be administered at different injection sites.

Concomitant administration of Arexvy with other vaccines than those listed above has not been studied

## 4.6 Fertility, pregnancy and lactation

Pregnancy

There are no data from the use of Arexvy in pregnant women. After administration of an investigational unadjuvanted RSVPreF3 vaccine to 3,557 pregnant women in a single clinical study, an increase in preterm births was observed compared to placebo. Currently no conclusion on a causal relationship between administration of unadjuvanted RSVPreF3 and preterm birth can be drawn. Results from animal studies with an investigational unadjuvanted RSVPreF3 vaccine and results with Arexvy do not indicate direct or indirect harmful effects with respect to developmental and reproductive toxicity (see section 5.3). Arexvy is not recommended during pregnancy.

Breast-feeding

There are no data on the excretion of Arexvy in human or animal milk. Arexvy is not recommended in breast-feeding/lactating women.

Fertility

There are no data on the effects of Arexvy on human fertility. Animal studies with an investigational unadjuvanted RSVPreF3 vaccine or Arexvy do not indicate direct or indirect harmful effects with respect to reproductive toxicity (see section 5.3).

## 4.7 Effects on ability to drive and use machines

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

Arexvy has a minor influence on the ability to drive and use machines. Some of the effects mentioned under section 4.8 “Undesirable effects” (e.g. fatigue) may temporarily affect the ability to drive or use machines.

## 4.8 Undesirable effects

Summary of the safety profile

The safety profile presented in Table 1 is based on a placebo-controlled Phase III clinical study (conducted in Europe, North America, Asia and Southern hemisphere) in adults ≥ 60 years of age in which more than 12 000 adults received one dose of Arexvy and more than 12 000 received placebo with a follow-up period of approximately 12 months.

In study participants 60 years of age and older, the most commonly reported adverse reactions were injection site pain (61%), fatigue (34%), myalgia (29%), headache (28%), and arthralgia (18%). These adverse reactions were usually mild or moderate in intensity and resolved within a few days after vaccination.
Most other adverse reactions were uncommon and similarly reported between the study groups.

Additionally, in a placebo-controlled Phase III clinical study (conducted in Europe, North America, Asia and Southern hemisphere), 769 participants 50 through 59 years of age (including 386 participants with pre-defined, stable, chronic medical conditions leading to an increased risk for RSV disease) and 381 participants 60 years of age and older received one dose of Arexvy. The reported adverse reactions were consistent with those presented in Table 1. There was a higher incidence of injection site pain, arthralgia, fatigue, myalgia, and headache in participants 50 through 59 years of age compared with those 60 years of age and older in the study. However, the duration and severity of these events were comparable across age groups in the study.

Tabulated list of adverse reactions

Adverse reactions are listed below by MedDRA system organ class and frequency.

| | |
|---|---|
| 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) |

**Table 1. Adverse reactions**

| System Organ Class | Frequency | Adverse reactions |
|---|---|---|
| Blood and lymphatic system disorders | Uncommon | lymphadenopathy |
| Immune system disorders | Uncommon | hypersensitivity reactions (such as rash) |
| Nervous system disorders | Very common | headache |
| Gastrointestinal disorders | Uncommon | nausea, abdominal pain, vomiting |
| Musculoskeletal and connective tissue disorders | Very common | myalgia, arthralgia |
| General disorders and administration site conditions | Very common | injection site pain, fatigue |
| | Common | injection site erythema, injection site swelling, fever, chills |
| | Uncommon | injection site pruritus |
| | | pain, malaise |

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.

## 4.9 Overdose

No case of overdose has been reported in the clinical studies.

# 5. PHARMACOLOGICAL PROPERTIES

## 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: respiratory syncytial virus vaccines, ATC code: J07BX05

Mechanism of action

By combining the RSV-specific antigen, F-protein in prefusion conformation, with an adjuvant system ($AS01_E$), Arexvy is designed to enhance antigen-specific cellular immune response and neutralizing antibodies response in individuals with pre-existing immunity against RSV. The adjuvant $AS01_E$ facilitates the recruitment and activation of antigen presenting cells carrying vaccine-derived antigens in the draining lymph node, which in turn leads to the generation of RSVPreF3-specific CD4+ T cells.

Efficacy

Efficacy against RSV-associated LRTD in adults 60 years and older was evaluated in an ongoing, Phase III, randomised, placebo-controlled, observer-blind clinical study conducted in 17 countries from Northern and Southern Hemispheres. Participants are planned to be followed for up to 36 months.

The primary population for efficacy analysis (referred to as the modified Exposed Set, included adults 60 years of age and older receiving 1 dose of Arexvy or placebo and who did not report an RSV-confirmed acute respiratory illness (ARI) prior to Day 15 after vaccination) included 24 960 participants randomised equally to receive 1 dose of Arexvy (N = 12 466) or placebo (N = 12 494). At the time of the primary efficacy analysis, participants had been followed for the development of RSV-associated LRTD for a median of 6.7 months.

The median age of participants was 69 years (range: 59 to 102 years), with approximately 74% over 65 years of age, approximately 44% over 70 years of age and approximately 8% over 80 years of age. Approximately 52% were female. At baseline, 39.3% of participants had at least one comorbidity of interest; 19.7% of participants had an underlying cardiorespiratory condition (COPD, asthma, any chronic respiratory/pulmonary disease, or chronic heart failure) and 25.8% of participants had endocrinometabolic conditions (diabetes, advanced liver or renal disease).

*Efficacy against RSV-associated LRTD over the first RSV season*

The primary objective was to demonstrate the efficacy in the prevention of a first episode of confirmed RSV-A and/or B associated LRTD during the first season. Confirmed RSV cases were determined by quantitative Reverse Transcription Polymerase Chain Reaction (qRT-PCR) on nasopharyngeal swab. LRTD was defined based on the following criteria: the participant must have experienced at least 2 lower respiratory symptoms/signs including at least 1 lower respiratory sign for at least 24 hours, or experienced at least 3 lower respiratory symptoms for at least 24 hours. Lower respiratory symptoms included: new or increased sputum, new or increased cough, new or increased dyspnea (shortness of breath). Lower respiratory signs included: new or increased wheezing, crackles/rhonchi, respiratory rate ≥ 20 respirations/min, low or decreased oxygen saturation ($O_2$ saturation < 95% or ≤ 90% if baseline is < 95%) or need for oxygen supplementation.

The vaccine efficacy overall and by subgroups is presented in Table 2.

Efficacy in preventing first RSV-associated LRTD with an onset from 15 days after vaccination compared to placebo was 82.6% (96.95% confidence interval of 57.9% to 94.1%) in participants 60 years of age and older. Vaccine efficacy against RSV-LRTD was observed through the median follow-up period of 6.7 months. The vaccine efficacy against RSV A-associated LRTD cases and RSV B-associated LRTD cases was 84.6% (95% CI [32.1, 98.3]) and 80.9% (95% CI [49.4, 94.3]), respectively.

**Table 2. Efficacy analysis over the first RSV season: First RSV-associated LRTD overall, by age and co-morbidity subgroups (modified exposed set)**

| Subgroup | Arexvy | | | Placebo | | | % Efficacy (CI)[a] |
|---|---|---|---|---|---|---|---|
| | N | n | Incidence rate per 1 000 person-years | N | n | Incidence rate per 1 000 person-years | |
| **Overall (≥ 60 years)[b]** | 12 466 | 7 | 1.0 | 12 494 | 40 | 5.8 | 82.6 (57.9, 94.1) |
| **60-69 years** | 6 963 | 4 | 1.0 | 6 979 | 21 | 5.5 | 81.0 (43.6, 95.3) |
| **70-79 years** | 4 487 | 1 | 0.4 | 4 487 | 16 | 6.5 | 93.8 (60.2, 99.9) |
| **Participants with at least 1 comorbidity of interest** | 4 937 | 1 | 0.4 | 4 861 | 18 | 6.6 | 94.6 (65.9, 99.9) |

[a] CI = Confidence Interval (96.95% for the overall (≥ 60 years) and 95% for all subgroup analyses). Two-sided exact CI for vaccine efficacy is derived based on Poisson model adjusted by age categories and regions.
[b] Primary confirmatory objective with pre-specified success criterion of lower limit of the 2-sided CI for vaccine efficacy above 20%
N = Number of participants included in each group
n = Number of participants having first occurrence of RSV-confirmed LRTD occurring from Day 15 post vaccination

The vaccine efficacy in the subgroup of participants 80 years of age and older (1 016 participants in Arexvy vs 1 028 participants in placebo) cannot be concluded due to the low number of total cases accrued (5 cases).

Amongst 18 RSV-LRTD cases with at least 2 lower respiratory signs or preventing everyday activities, 4 cases of severe RSV-LRTD requiring oxygen supplementation occurred in the placebo group, while there were none in the Arexvy group.

*Efficacy against RSV-associated LRTD over 2 RSV seasons*

Over 2 RSV seasons (up to end of second season in Northern Hemisphere), with a median follow-up time of 17.8 months, the vaccine efficacy against RSV-associated LRTD was 67.2% (97.5% CI [48.2, 80.0]) in participants 60 years of age and older (30 cases in the Arexvy group and 139 cases in the placebo group).

Subgroup analyses of RSV-associated LRTD vaccine efficacy showed similar efficacy point estimates. The vaccine efficacy against RSV-associated LRTD was 66.7% (95% CI [41.8, 82.0]) for participants with at least one comorbidity of interest. The vaccine efficacy against RSV-associated LRTD was 65.4% (95% CI [40.4, 80.9]) in participants 60-69 years of age

and 74.9% (95% CI [48.4, 89.2]) in participants 70-79 years of age. The vaccine efficacy in the subgroup of participants 80 years of age and older cannot be concluded due to the low number of total cases accrued (4 cases in the Arexvy group and 10 cases in the placebo group).

Amongst 55 RSV-LRTD cases (7 cases in the Arexvy group and 48 in the placebo group) with at least 2 lower respiratory signs or preventing everyday activities, 5 cases of severe RSV-LRTD requiring oxygen supplementation occurred in the placebo group, while there was 1 case in the Arexvy group.

Immunogenicity in adults 50 through 59 years of age at increased risk for RSV disease

The non-inferiority of the immune response to Arexvy in adults 50 through 59 years of age compared to adults 60 years of age and older, where vaccine efficacy against RSV-associated LRTD was demonstrated, was evaluated in a Phase III, observer-blind, randomised, placebo-controlled study.

Cohort 1 consisted of participants 50 through 59 years of age separated in 2 sub-cohorts according to their medical history. Sub-cohort 1 consisted of participants with pre-defined, stable, chronic medical conditions leading to an increased risk for RSV disease (Arexvy, N= 386; placebo, N= 191) such as chronic pulmonary disease, chronic cardiovascular disease, diabetes, chronic kidney or liver disease. Sub-cohort 2 consisted of participants without pre-defined, stable, chronic medical conditions (Arexvy, N= 383; placebo, N= 192). Cohort 2 consisted of participants 60 years of age and older (Arexvy, N= 381).

The primary immunogenicity objective was to demonstrate non-inferiority of the humoral immune response (in terms of RSV-A and RSV-B neutralizing titers) following the administration of Arexvy at 1-month post-vaccination in participants 50-59 years of age with pre-defined, stable, chronic medical conditions leading to an increased risk for RSV disease, compared to participants 60 years of age and older.

The prespecified criteria for non-inferiority of the immune responses were defined as the 2-sided 95% CI upper limits (UL) on the group geometric mean titer (GMT) ratios ≤ 1.50 and the UL of the 2-sided 95% CIs on the Seroresponse Rate (SRR) difference ≤ 10% for the RSV-A and RSV-B neutralizing titers in participants 60 years of age and older relative to participants 50 through 59 years of age with pre-defined, stable, chronic medical conditions leading to an increased risk for RSV disease.

**Table 3. Summary of Geometric Mean Titer ratios and Seroresponse Rate difference in terms of RSV-A and RSV-B neutralizing titers (ED60) in adults 50 through 59 years of age with pre-defined, stable, chronic medical conditions[a] leading to an increased risk for RSV disease compared to adults 60 years of age and older – Per Protocol Set**

| | GMT ratio | SRR difference |
|---|---|---|
| **RSV-A neutralizing titers (ED60)** | 0.8 (95% CI [0.7, 1.0]) | -6.5 (95% CI [-12.1, -0.9]) |

| | | |
|---|---|---|
| **RSV-B neutralizing titers (ED60)** | 0.8 (95% CI [0.7, 0.9]) | -7.2 (95% CI [-13.3, -0.9]) |

[a] Pre-defined, stable, chronic medical conditions such as chronic pulmonary disease, chronic cardiovascular disease, diabetes, chronic kidney or liver disease.
ED60: Estimated Dilution 60; CI = Confidence interval; GMT = Geometric mean titer; SRR = Seroresponse rate

The non-inferiority criteria of the immune responses for the RSV-A and RSV-B neutralizing titers were met. The efficacy of Arexvy, in adults 50 through 59 years of age at increased risk for RSV disease, can be inferred following comparison of the immune response in adults 50 through 59 years of age with the immune response in adults 60 years of age and older in which vaccine efficacy was demonstrated.

Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with Arexvy in one or more subsets of the paediatric population in prevention of lower respiratory tract disease caused by respiratory syncytial virus (see section 4.2 for information on paediatric use).

## 5.2 Pharmacokinetic properties

Not applicable

## 5.3 Preclinical safety data

Non-clinical data reveal no special hazard for humans based on conventional studies of repeated dose toxicity.
Reproductive and developmental studies with an unadjuvanted RSVPreF3 vaccine as well as results from a study with Arexvy in rabbits did not reveal vaccine-related effects on female fertility, pregnancy, or embryo-foetal or offspring development.

# 6. PHARMACEUTICAL PARTICULARS

## 6.1 List of excipients

Powder (RSVPreF3 antigen)

Trehalose dihydrate
Polysorbate 80 (E 433)
Potassium dihydrogen phosphate (E 340)
Dipotassium phosphate (E 340)

Suspension (AS01E Adjuvant System)

Dioleoyl phosphatidylcholine (E 322)
Cholesterol
Sodium chloride
Disodium phosphate, anhydrous (E 339)

Potassium dihydrogen phosphate (E 340)
Water for injections

For adjuvant see also section 2.

## 6.2 Incompatibilities

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

## 6.3 Shelf life

3 years

After reconstitution

Chemical and physical in-use stability has been demonstrated for 4 hours at 2 °C – 8 °C or at room temperature up to 25 °C.

From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and should not be longer than 4 hours.

## 6.4 Special precautions for storage

Store in a refrigerator (2 °C – 8 °C).
Do not freeze.
Store in the original package in order to protect from light.
For storage conditions after reconstitution of the medicinal product, see section 6.3

## 6.5 Nature and contents of container

Arexvy is presented as:

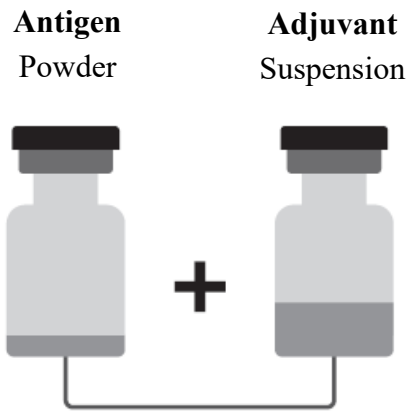
- Powder for 1 dose in a vial (type I glass) with a stopper (butyl rubber) and a mustard green flip-off cap (antigen).
- Suspension for 1 dose in a vial (type I glass) with a stopper (butyl rubber) and a brown flip-off cap (adjuvant).

Arexvy is available in a pack size of 1 vial of powder plus 1 vial of suspension or in a pack size of 10 vials of powder plus 10 vials of suspension.

Not all pack sizes may be marketed.

## 6.6 Special precautions for disposal and other handling

The powder and the suspension must be reconstituted prior to administration.




**1 dose (0.5 mL)**

The powder and suspension should be inspected visually for any foreign particulate matter and/or variation of appearance. If either is observed, do not reconstitute the vaccine.

How to prepare Arexvy

Arexvy must be reconstituted prior to administration.

1. Withdraw the entire contents of the vial containing the suspension into a syringe.
2. Add the entire contents of the syringe into the vial containing the powder.
3. Gently swirl until the powder is completely dissolved.

The reconstituted vaccine is an opalescent, colourless to pale brownish liquid.

The reconstituted vaccine should be inspected visually for any foreign particulate matter and/or variation of appearance. If either is observed, do not administer the vaccine.

Chemical and physical in-use stability has been demonstrated for 4 hours at 2 °C – 8 °C or at room temperature up to 25 °C.
From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and should not be longer than 4 hours.

Before administration

1. Withdraw 0.5 mL of the reconstituted vaccine into the syringe.
2. Change the needle so that you are using a new needle.

Administer the vaccine intramuscularly.

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

## 7. MARKETING AUTHORISATION HOLDER

GlaxoSmithKline (Thailand) Ltd.

## 8. MARKETING AUTHORISATION NUMBER(S)

1C 12/67 (NBC)

## 9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

03 May 2024

## 10. DATE OF REVISION OF THE TEXT

29 November 2023

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