

**ANNEX I**

**SUMMARY OF PRODUCT CHARACTERISTICS**

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

## **1. NAME OF THE MEDICINAL PRODUCT**

Saphnelo 300 mg concentrate for solution for infusion

## **2. QUALITATIVE AND QUANTITATIVE COMPOSITION**

Each mL of concentrate for solution for infusion contains 150 mg of anifrolumab.

One vial of 2.0 mL of concentrate contains 300 mg of anifrolumab (150 mg/mL).

Anifrolumab is a human, immunoglobulin G1 kappa (IgG1κ) monoclonal antibody produced in mouse myeloma cells (NS0) by recombinant DNA technology.

For the full list of excipients, see section 6.1.

## **3. PHARMACEUTICAL FORM**

Concentrate for solution for infusion (sterile concentrate)

Clear to opalescent, colourless to slightly yellow, pH 5.9 solution.

## **4. CLINICAL PARTICULARS**

### **4.1 Therapeutic indications**

Saphnelo is indicated as an add-on therapy for the treatment of adult patients with moderate to severe, active autoantibody-positive systemic lupus erythematosus (SLE), despite standard therapy.

### **4.2 Posology and method of administration**

Treatment should be initiated and supervised by a physician experienced in the treatment of SLE.

#### Posology

The recommended dose is 300 mg, administered as an intravenous infusion over a 30-minute period, every 4 weeks.

In patients with a history of infusion-related reactions, premedication (e.g., an antihistamine) may be administered before the infusion of anifrolumab (see section 4.4).

#### *Missed dose*

If a planned infusion is missed, treatment should be administered as soon as possible. A minimum interval of 14 days should be maintained between doses.

#### Special populations

##### *Elderly (≥65 years old)*

No dose adjustment is required. There is limited information in subjects aged ≥65 years (n=20); no data are available in patients over 75 years of age (see section 5.2).

#### *Renal impairment*

No dose adjustment is required. There is no experience in patients with severe renal impairment or end-stage renal disease (see section 5.2).

#### *Hepatic impairment*

No dose adjustment is required (see section 5.2).

#### *Paediatric population*

The safety and efficacy of Saphnelo in children and adolescents (aged <18 years old) have not yet been established. No data are available.

#### Method of administration

For intravenous use.

Saphnelo must not be administered as an intravenous push or bolus injection.

Following dilution with sodium chloride 9 mg/mL (0.9%) solution for injection, Saphnelo is administered as an infusion over 30 minutes through an intravenous infusion line containing a sterile, low-protein binding 0.2 or 0.22 micron in-line filter.

The infusion rate may be slowed or interrupted if the patient develops an infusion reaction.

Upon completion of the infusion, the infusion set should be flushed with 25 mL sodium chloride 9 mg/mL (0.9%) solution for injection to ensure that all of the solution for infusion has been administered.

Do not co-administer any other medicinal products through the same infusion line.

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

### **4.3 Contraindications**

Hypersensitivity to the active substance 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.

#### Patient groups excluded from clinical studies

Anifrolumab has not been studied in combination with other biologic therapies, including B-cell-targeted therapies. Therefore, treatment with anifrolumab is not recommended in combination with biologic therapies.

Anifrolumab has not been studied in patients with severe active central nervous system lupus or severe active lupus nephritis (see section 5.1).

#### Hypersensitivity

Serious hypersensitivity reactions including anaphylaxis have been reported following administration of anifrolumab (see section 4.8).

In the placebo-controlled clinical trials, serious hypersensitivity reactions (including angioedema) were reported for 0.6% of patients receiving anifrolumab.

In patients with a history of infusion-related reactions and/or hypersensitivity, premedication (e.g., an antihistamine) may be administered before the infusion of anifrolumab (see section 4.2).

If a serious infusion-related or hypersensitivity reaction (e.g., anaphylaxis) occurs, administration of anifrolumab should be interrupted immediately, and appropriate therapy initiated.

### Infections

Anifrolumab increases the risk of respiratory infections and herpes zoster (disseminated herpes zoster events have been observed), see section 4.8. SLE patients also taking immunosuppressants may be at higher risk of herpes zoster infections.

In controlled-clinical trials serious and sometimes fatal infections have occurred, including in patients receiving anifrolumab.

Due to the mechanism of action, anifrolumab should be used with caution in patients with a chronic infection, a history of recurrent infections, or known risk factors for infection. Treatment with anifrolumab should not be initiated in patients with any clinically significant active infection until the infection resolves or is adequately treated. Patients should be instructed to seek medical advice if signs or symptoms of clinically significant infection occur. If a patient develops an infection, or is not responding to standard therapy, they should be closely monitored and careful consideration given to interrupting anifrolumab therapy until the infection resolves.

Studies in patients with a history of primary immunodeficiency have not been conducted.

The placebo-controlled clinical trials excluded patients with a history of active TB or latent TB in whom an adequate course of treatment could not be confirmed. Anti-tuberculosis (anti-TB) therapy should be considered prior to initiation of anifrolumab in patients with untreated latent TB. Anifrolumab should not be administered to patients with active TB.

### Immunisations

No data are available on the immune response to vaccines.

Prior to initiating therapy, completion of all appropriate immunisations should be considered according to current immunisation guidelines. Concurrent use of live or attenuated vaccines should be avoided in patients treated with anifrolumab.

### Malignancy

The impact of treatment with anifrolumab on the potential development of malignancies is not known. Studies in patients with a history of malignancy have not been conducted; however, patients with squamous or basal cell skin cancers and uterine cervical cancer that had been fully excised or adequately treated were eligible for enrolment in the SLE clinical trials.

In the placebo-controlled clinical trials, at any dose, malignant neoplasm (including non-melanoma skin cancers) was reported for 1.2% patients receiving anifrolumab, compared to 0.6% patients receiving placebo (EAIR: 1.2 and 0.7 per 100 patient years, respectively). Malignancies excluding non-melanoma skin cancers were observed in 0.7% and 0.6% of patients receiving anifrolumab and placebo, respectively. In patients receiving anifrolumab, breast and squamous cell carcinoma were the malignancies observed in more than one patient.

Individual benefit-risk should be considered in patients with known risk factors for the development or reoccurrence of malignancy. Caution should be exercised when considering continuing therapy for patients who develop malignancy.

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

No interaction studies have been performed.

Anifrolumab is not expected to undergo metabolism by hepatic enzymes or renal elimination.

The formation of some CYP450 enzymes is suppressed by increased levels of certain cytokines during chronic inflammation. Anifrolumab modestly suppresses the levels of some cytokines; the impact on CYP450 activity is unknown. In patients who are being treated with other medicines that are CYP substrates with a narrow therapeutic index, where the dose is individually adjusted (e.g., warfarin), therapeutic monitoring is recommended.

##### Immune response

Concomitant administration of anifrolumab with vaccines has not been studied (see section 4.4).

#### **4.6 Fertility, pregnancy and lactation**

##### Pregnancy

There are limited data (less than 300 pregnancy outcomes) from the use of Saphnelo in pregnant women.

Animal studies are inconclusive with respect to reproductive toxicity (see section 5.3).

Saphnelo is not recommended during pregnancy and in women of childbearing potential not using contraception, unless the possible benefit justifies the potential risk.

##### Breast-feeding

It is not known whether anifrolumab is excreted in human milk. Anifrolumab was detected in the milk of female cynomolgus monkeys (see section 5.3).

A risk to the suckling child cannot be excluded.

A decision must be made whether to discontinue breast-feeding or to discontinue from Saphnelo therapy, taking into account the benefit of breast-feeding for the child and the benefit of therapy for the woman.

##### Fertility

There are no fertility data in humans.

Animal studies show no adverse effects of anifrolumab on indirect measures of fertility (see section 5.3).

#### **4.7 Effects on ability to drive and use machines**

Saphnelo has no or negligible influence on the ability to drive and use machines.

## 4.8 Undesirable effects

### Summary of the safety profile

The most commonly reported adverse reactions during anifrolumab treatment were upper respiratory tract infection (34%), bronchitis (11%), infusion-related reaction (9.4%) and herpes zoster (6.1%). The most common serious adverse reaction was herpes zoster (0.4%).

### Tabulated list of adverse reactions

Adverse reactions reported from controlled clinical trials are classified by MedDRA System Organ Class (SOC), see Table 1. Within each SOC, preferred terms are arranged by decreasing frequency and then by decreasing seriousness. Frequencies of occurrence of adverse reactions are defined as: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1\ 000$  to  $< 1/100$ ); rare ( $\geq 1/10\ 000$  to  $< 1/1\ 000$ ); very rare ( $< 1/10\ 000$ ) and not known (cannot be estimated from available data).

**Table 1** Adverse reactions

MedDRA SOC	MedDRA Preferred Term	Frequency
Infections and infestations	Upper respiratory tract infection*	Very common
	Bronchitis*	Very common
	Herpes Zoster	Common
	Respiratory tract infection*	Common
Immune system disorders	Hypersensitivity	Common
	Anaphylactic reaction	Uncommon <sup>§</sup>
Injury, poisoning and procedural complications	Infusion related reaction	Common

\* Grouped terms: Upper respiratory tract infection (including Upper respiratory tract infection, Nasopharyngitis, Pharyngitis); Bronchitis (including Bronchitis, Bronchitis viral, Tracheobronchitis); Respiratory tract infection (including Respiratory tract infection, Respiratory tract infection viral, Respiratory tract infection bacterial).

<sup>§</sup> see 'Description of selected adverse reactions' below and section 4.4.

### Description of selected adverse reactions

#### *Hypersensitivity and infusion-related reactions*

The incidence of hypersensitivity reactions was 2.8% in the anifrolumab group and 0.6% in the placebo group. All hypersensitivity reactions were reported within the first 6 infusions. Hypersensitivity reactions were predominantly mild to moderate in intensity and did not lead to discontinuation of anifrolumab therapy. One serious adverse reaction of hypersensitivity was reported during the patient's first infusion; the patient continued to receive anifrolumab with premedication given for subsequent infusions.

In the SLE development program, anaphylactic reaction was reported for 0.1% (1/837) of patients; the event occurred following the administration of 150 mg anifrolumab, the patient was treated and recovered (see section 4.4).

The incidence of infusion-related reactions was 9.4% in the anifrolumab group and 7.1% in the placebo group. Infusion-related reactions were mild or moderate in intensity (the most common symptoms were headache, nausea, vomiting, fatigue, and dizziness); none were serious, and none led to discontinuation of anifrolumab. Infusion-related reactions were most commonly reported at the start of treatment, on the first and second infusions, with fewer reports on subsequent infusions.

### *Respiratory infections*

Reporting rates for anifrolumab compared to placebo were; upper respiratory tract infection (34.4% vs 23.2%), bronchitis (10.7% vs 5.2%) and respiratory tract infection (3.3% vs 1.5%). Infections were predominantly non-serious, mild or moderate in intensity and resolved without discontinuation of anifrolumab therapy (see section 4.4).

### *Herpes zoster*

The incidence of herpes zoster infections was 6.1% in the anifrolumab group and 1.3% in the placebo group (see section 4.4). In the 52-week clinical trials the mean time to onset was 139 days (range 2 – 351 days).

Herpes zoster infections were predominantly of localised cutaneous presentation, mild or moderate in intensity and resolved without discontinuation of anifrolumab therapy. Cases with multidermatomal involvement and cases of disseminated disease (including central nervous system involvement) have been reported (see section 4.4).

### Immunogenicity

In the Phase III trials, treatment-emergent anti-drug antibodies were detected in 6 out of 352 (1.7%) patients treated with anifrolumab at the recommended dosing regimen during the 60-week study period. Due to methodological limitations, the clinical relevance of this finding is not known.

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in [Appendix V](#).

## **4.9 Overdose**

In clinical trials, doses of up to 1 000 mg have been administered intravenously in patients with SLE with no evidence of dose limiting toxicities.

There is no specific treatment for an overdose with anifrolumab. If overdose occurs, the patient should be treated supportively with appropriate monitoring as necessary.

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Immunosuppressants, Selective immunosuppressants, ATC code: L04AA51

### Mechanism of action

Anifrolumab is a human immunoglobulin G1 kappa monoclonal antibody that binds to subunit 1 of the type I interferon receptor (IFNAR1) with high specificity and affinity. This binding inhibits type I IFN signalling thereby blocking the biologic activity of type I IFNs. Anifrolumab also induces the internalisation of IFNAR1, thereby reducing the levels of cell surface IFNAR1 available for receptor assembly. Blockade of receptor mediated type I IFN signalling inhibits IFN responsive gene expression as well as downstream inflammatory and immunological processes. Inhibition of type I IFN blocks plasma cell differentiation and normalises peripheral T-cell subsets, restoring the balance between adaptive and innate immunity that is dysregulated in SLE.

## Pharmacodynamic effects

In adult patients with SLE, administration of anifrolumab at doses  $\geq 300$  mg, via intravenous infusion every 4 weeks, demonstrated consistent neutralisation ( $\geq 80\%$ ) of a 21 gene type I interferon pharmacodynamic (PD) signature in blood. This suppression occurred as early as 4 weeks post-treatment and was either maintained or further suppressed over the 52-week treatment period. Following withdrawal of anifrolumab at the end of the 52-week treatment period in the SLE clinical trials, the type I IFN PD signature in blood samples returned to baseline levels within 8 to 12 weeks. Anifrolumab 150 mg IV showed  $<20\%$  suppression of the gene signature at early timepoints, that reached a maximum of  $<60\%$  by the end of the treatment period.

In SLE patients with positive anti-dsDNA antibodies at baseline, treatment with anifrolumab 300 mg led to numerical reductions in anti-dsDNA antibodies over time through Week 52.

In patients with low complement levels (C3 and C4), increases in complement levels were observed in patients receiving anifrolumab through Week 52.

## Clinical efficacy

The safety and efficacy of anifrolumab were evaluated in two 52-week treatment period, multicentre, randomised, double-blind, placebo-controlled, Phase III studies (Trial 1 [TULIP 1] and Trial 2 [TULIP 2]). Patients were diagnosed with SLE according to the American College of Rheumatology (1997) classification criteria.

All patients were  $\geq 18$  years of age and had moderate to severe disease, with a SLE Disease Activity Index 2000 (SLEDAI-2K) score  $\geq 6$  points, organ level involvement based on British Isles Lupus Assessment Group (BILAG) assessment, and a Physician's Global Assessment [PGA] score  $\geq 1$ , despite receiving standard SLE therapy consisting of either one or any combination of oral corticosteroids (OCS), antimalarials and/or immunosuppressants at baseline. With the exception of OCS (prednisone or equivalent) where tapering was a component of the protocol, patients continued to receive their existing SLE therapy at stable doses during the clinical trials. Patients who had severe active lupus nephritis and patients who had severe active central nervous system lupus were excluded. The use of other biologic agents and cyclophosphamide were not permitted during the clinical trials. Patients receiving other biologic therapies were required to complete a wash-out period of at least 5 half-lives prior to enrolment. Both studies were conducted in North America, Europe, South America and Asia. Patients received anifrolumab or placebo, administered by intravenous infusion, every 4 weeks.

Trial 1 (N=457) and Trial 2 (N=362) were similar in design.

In Trial 1 the primary endpoint was SLE Responder Index (SRI-4) response, defined as meeting each of the following criteria at Week 52 compared with baseline:

- Reduction from baseline of  $\geq 4$  points in the SLEDAI-2K;
- No new organ system affected as defined by 1 or more BILAG A or 2 or more BILAG B items compared to baseline;
- No worsening from baseline in the lupus disease activity defined by an increase  $\geq 0.30$  points on a 3-point PGA visual analogue scale (VAS);
- No use of restricted medication beyond the protocol-allowed thresholds;
- No discontinuation of treatment.

In Trial 2 the primary endpoint was British Isles Lupus Assessment Group based Composite Lupus Assessment (BICLA) response at Week 52, defined as improvement in all organ domains with moderate or severe activity at baseline:

- Reduction of all baseline BILAG A to B/C/D and baseline BILAG B to C/D, and no BILAG worsening in other organ systems, as defined by  $\geq 1$  new BILAG A or  $\geq 2$  new BILAG B;



- No worsening from baseline in SLEDAI-2K, where worsening is defined as an increase from baseline of >0 points;
- No worsening from baseline in lupus disease activity, where worsening is defined by an increase  $\geq 0.30$  points on a 3-point PGA VAS;
- No use of restricted medication beyond the protocol-allowed thresholds;
- No discontinuation of treatment.

The secondary efficacy endpoints included in both studies included maintenance of OCS reduction and annual flare rate. Both studies evaluated the efficacy of anifrolumab 300 mg versus placebo.

Patient demographics were generally similar in both trials; the median age was 41.3 and 42.1 years (range 18-69), 4.4% and 1.7% were  $\geq 65$  years of age, 92% and 93% were female, 71% and 60% were White, 14% and 12% were Black/African American, and 5% and 17% were Asian, in Trials 1 and 2 respectively. In both trials, 72% of patients had high disease activity (SLEDAI-2K score  $\geq 10$ ). In Trials 1 and 2 respectively, 47% and 49% had severe disease (BILAG A) in at least 1 organ system and 46% and 47% of patients had moderate disease (BILAG B) in at least 2 organ systems. The most commonly affected organ systems (BILAG A or B at baseline) were the mucocutaneous (Trial 1: 87%, Trial 2: 85%) and musculoskeletal (Trial 1: 89%, Trial 2: 88%) systems.

In Trials 1 and 2, 90% of patients (both trials) were seropositive for anti-nuclear antibodies (ANA), and 45% and 44% for anti-double-stranded DNA (anti-dsDNA) antibodies; 34% and 40% of patients had low C3, and 21% and 26% had low C4.

Baseline concomitant standard therapy medications included oral corticosteroids (Trial 1: 83%, Trial 2: 81%), antimalarials (Trial 1: 73%, Trial 2: 70%) and immunosuppressants (Trial 1: 47%, Trial 2: 48%; including azathioprine, methotrexate, mycophenolate and mizoribine). For those patients taking OCS (prednisone or equivalent) at baseline, the mean daily dose was 12.3 mg in Trial 1 and 10.7 mg in Trial 2. During Weeks 8-40, patients with a baseline OCS  $\geq 10$  mg/day were required to taper their OCS dose to  $\leq 7.5$  mg/day, unless there was worsening of disease activity.

For BICLA and SRI(4) response, patients who withdrew from treatment prior to Week 52 were considered non-responders. In Trial 1 and 2 respectively, 35 (19%) and 27 (15%) patients receiving anifrolumab, and 38 (21%) and 52 (29%) patients receiving placebo withdrew from treatment prior to Week 52. The results are presented in Table 2.

**Table 2 Efficacy results in adults with SLE in Trial 1 and Trial 2**

Table 2

Efficacy Results in adults with SLE in Trial 1 and Trial 2

	Trial 1		Trial 2	
	Anifrolumab 300 mg	Placebo	Anifrolumab 300 mg	Placebo
BICLA response at Week 52*				
Responder rate, % (n/N)	47.1 (85/180)	30.2 (55/184)	47.8 (86/180)	31.5 (57/182)
Difference % (95% CI)	17.0 (7.2, 26.8)		16.3 (6.3, 26.3)	
<u>Components of BICLA response:</u>				
BILAG improvement, n (%) †	85 (47.2)	58 (31.5)	88 (48.9)	59 (32.4)
No worsening of SLEDAI-2K, n (%) †	121 (67.2)	104 (56.5)	122 (67.8)	94 (51.6)
No worsening of PGA, n (%) †	117 (65.0)	105 (57.1)	122 (67.8)	95 (52.2)
No discontinuation of treatment, n (%)	145 (80.6)	146 (79.3)	153 (85.0)	130 (71.4)
No use of restricted medication beyond protocol allowed threshold, n (%)	140 (77.8)	128 (69.6)	144 (80.0)	123 (67.6)

	Trial 1		Trial 2	
	Anifrolumab 300 mg	Placebo	Anifrolumab 300 mg	Placebo
SRI-4 response at Week 52*				
Responder rate, % (n/N) †	49.0 (88/180)	43.0 (79/184)	55.5 (100/180)	37.3 (68/182)
Difference % (95% CI)	6.0 (-4.2, 16.2)		18.2 (8.1, 28.3)	
Sustained OCS reduction ‡				
Responder rate, % (n/N) †	49.7 (51/103)	33.1 (34/102)	51.5 (45/87)	30.2 (25/83)
Difference % (95% CI)	16.6 (3.4, 29.8)		21.2 (6.8, 35.7)	
Flare rate				
Annualised flare rate estimate, (95% CI)	0.57 (0.43, 0.76)	0.68 (0.52, 0.90)	0.43 (0.31, 0.59)	0.64 (0.47, 0.86)
Rate ratio estimate (95% CI)	0.83 (0.61, 1.15)		0.67 (0.48, 0.94)	

BICLA: British Isles Lupus Assessment Group-based Composite Lupus Assessment; BILAG: British Isles Lupus Assessment Group, PGA: Physician's Global Assessment; SLEDAI-2K: Systemic Lupus Erythematosus Disease Activity Index 2000; SRI-4: SLE Responder Index.

All patients received standard therapy.

\* BICLA and SRI(4) are based on the composite estimand where treatment discontinuation or restricted medication use are part of the response criteria.

† Patients who discontinued treatment or used restricted medications beyond protocol allowed threshold are considered non-responders.

‡ Subgroup of patients with OCS  $\geq 10$  mg/day at baseline. Responders were defined as patients with OCS reduction to  $\leq 7.5$  mg/day at Week 40, maintained through Week 52.

### Paediatric population

The European Medicines Agency has deferred the obligation to submit the results of studies with anifrolumab in one or more subset of the paediatric population in treatment of systemic lupus erythematosus (see section 4.2 for information on paediatric use).

## **5.2 Pharmacokinetic properties**

The pharmacokinetics (PK) of anifrolumab was studied in adult patients with SLE following intravenous doses ranging from 100 to 1 000 mg, once every 4 weeks, and healthy volunteers following a single dose.

Anifrolumab exhibits nonlinear PK in the dose range of 100 mg to 1 000 mg. PK exposure decreased more rapidly at doses lower than 300 mg every 4 weeks (the recommended dose).

### Absorption

Anifrolumab is administered by intravenous infusion.

### Distribution

Based on population pharmacokinetic analysis, the estimated central and peripheral volumes of distribution for anifrolumab were 2.93 L (with 26.9% CV inter-individual variability) and 3.3 L, respectively for a 69.1 kg patient.

### Biotransformation

Anifrolumab is a protein, therefore specific metabolism studies have not been conducted.

Anifrolumab is eliminated by target IFNAR-mediated elimination pathway and reticuloendothelial system where anifrolumab is expected to be degraded, into small peptides and individual amino acids, by proteolytic enzymes that are widely distributed in the body.

### Elimination

Due to saturation of IFNAR1-mediated clearance at higher doses, exposure increases are greater-than-dose-proportional.

From population PK modelling the estimated typical systemic clearance (CL) was 0.193 L/day with a 33.0% CV inter-individual variability. The median CL decreases slowly over time, with an 8.4% reduction after 1 year of treatment.

Based on population PK analysis, serum concentrations were below detection in the majority (95%) of patients approximately 16 weeks after the last dose of anifrolumab, when anifrolumab has been dosed for one year.

### Special populations

There was no clinically meaningful difference in systemic clearance based on age, race, ethnicity, region, gender, IFN status or body weight that requires dose adjustment.

#### *Elderly patients ( $\geq 65$ years old)*

Based on the population PK analysis, age (range 18 to 69 years) did not impact the clearance of anifrolumab; the population PK dataset included 20 (3%) patients  $\geq 65$  years of age.

#### *Renal impairment*

No specific clinical studies have been conducted to investigate the effect of renal impairment on anifrolumab. Based on population PK analyses, anifrolumab clearance was comparable in SLE patients with mild (60-89 mL/min/1.73 m<sup>2</sup>) and moderate decrease in eGFR (30-59 mL/min/1.73 m<sup>2</sup>) values and patients with normal renal function ( $\geq 90$  mL/min/1.73 m<sup>2</sup>). SLE patients with a severe decrease in eGFR or end-stage renal disease ( $<30$  mL/min/1.73 m<sup>2</sup>) were excluded from the clinical trials; anifrolumab is not cleared renally.

Patients with UPCR  $>2$  mg/mg were excluded from the clinical trials. Based on population PK analyses, increased urine protein/creatinine ratio (UPCR) did not significantly affect anifrolumab clearance.

#### *Hepatic impairment*

No specific clinical studies have been conducted to investigate the effect of hepatic impairment on anifrolumab.

As an IgG1 monoclonal antibody, anifrolumab is principally eliminated via catabolism and is not expected to undergo metabolism via hepatic enzymes, as such changes in hepatic function are unlikely to have any effect on the elimination of anifrolumab. Based on population pharmacokinetic analyses, baseline hepatic function biomarkers (ALT and AST  $\leq 2.0 \times$  ULN, and total bilirubin) had no clinically relevant effect on anifrolumab clearance.

### Interactions

Based on population PK analyses, concomitant use of oral corticosteroids, antimalarials, immunosuppressants (including azathioprine, methotrexate, mycophenolate and mizoribine), NSAIDs, ACE inhibitors, HMG-CoA reductase inhibitors did not significantly influence the PK of anifrolumab.

### **5.3 Preclinical safety data**

#### Non-clinical

Non-clinical data reveal no special hazard for humans based on conventional studies of safety pharmacology or repeated dose toxicity studies in cynomolgus monkeys.

#### Mutagenicity and carcinogenicity

Anifrolumab is a monoclonal antibody, as such genotoxicity and carcinogenicity studies have not been conducted.

In rodent models of IFNAR1 blockade, increased carcinogenic potential has been observed. The clinical relevance of these findings is unknown.

#### Reproductive toxicity

##### *Developmental toxicity*

In a pre- and postnatal development study, conducted in cynomolgus monkeys, there was an increased incidence of embryo-foetal loss; the incidence of these findings were within historical control values and were not statistically significant. The relevance of these findings to humans is not known. No maternal, or postnatal developmental effects were observed for exposures up to approximately 28-times the maximum recommended human dose (MRHD) on an AUC basis. Based on the available data, a potential effect of anifrolumab on conception and implantation cannot be excluded.

##### *Fertility*

Effects on male and female fertility have not been directly evaluated in animal studies. In the 9-month repeat-dose study, there were no anifrolumab-related adverse effects on indirect measures of male or female fertility, based on semen analysis, spermatogenesis staging, menses cycle, organ weights and histopathological findings in the reproductive organs, in cynomolgus monkeys at approximately 58-times the MRHD on an AUC basis.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Histidine  
Histidine hydrochloride monohydrate  
Lysine hydrochloride  
Trehalose dihydrate  
Polysorbate 80  
Water for injections

### **6.2 Incompatibilities**

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

### **6.3 Shelf life**

#### Unopened vial

3 years.

### Diluted solution for infusion

Chemical and physical in-use stability has been demonstrated for 24 hours at 2°C – 8°C and for 4 hours at 25°C.

From a microbiological point of view, the product should be used immediately after dilution. If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user and would normally not be longer than 24 hours at 2°C – 8°C.

## **6.4 Special precautions for storage**

### Unopened vial

Store in a refrigerator (2°C – 8°C).

Store in the original package in order to protect from light.

Do not freeze or shake.

### Diluted solution for infusion

For storage conditions after dilution of the medicinal product, see section 6.3.

## **6.5 Nature and contents of container**

2.0 mL of concentrate in a clear type I glass vial with an elastomeric stopper and a gray flip-off aluminium seal.

Pack size of 1 vial.

## **6.6 Special precautions for disposal and other handling**

Saphnelo is supplied as a single-dose vial. The solution for infusion should be prepared and administered by a healthcare professional, using aseptic technique as follows:

### Preparation of solution

1. Visually inspect the vial for particulate matter and discolouration. Saphnelo is a clear to opalescent, colourless to slightly yellow solution. Discard the vial if the solution is cloudy, discoloured or visible particles are observed. Do not shake the vial.
2. Dilute 2.0 mL of Saphnelo solution for infusion in an infusion bag to 100 mL with sodium chloride 9 mg/mL (0.9%) solution for injection.
3. Mix the solution by gentle inversion. Do not shake.
4. Any concentrate remaining in the vial must be discarded.
5. It is recommended that the solution for infusion should be administered immediately after preparation. If the solution for infusion has been stored in a refrigerator (see section 6.3), allow it to reach room temperature (15°C – 25°C) prior to administration.

### Disposal

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

**7. MARKETING AUTHORISATION HOLDER**

AstraZeneca AB  
SE-151 85  
Södertälje  
Sweden

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

EU/1/21/1623/001

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

**10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## **ANNEX II**

- A. MANUFACTURER OF THE BIOLOGICAL ACTIVE  
SUBSTANCE(S) AND MANUFACTURER(S) RESPONSIBLE  
FOR BATCH RELEASE**
- B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY  
AND USE**
- C. OTHER CONDITIONS AND REQUIREMENTS OF THE  
MARKETING AUTHORISATION**
- D. CONDITIONS OR RESTRICTIONS WITH REGARD TO  
THE SAFE AND EFFECTIVE USE OF THE MEDICINAL  
PRODUCT**

**A. MANUFACTURER OF THE BIOLOGICAL ACTIVE SUBSTANCE AND MANUFACTURER(S) RESPONSIBLE FOR BATCH RELEASE**

Name and address of the manufacturer of the biological active substance

AstraZeneca Pharmaceuticals LP Frederick Manufacturing Center (FMC)  
633 Research Court  
Frederick, Maryland  
21703  
United States

Name and address of the manufacturer(s) responsible for batch release

AstraZeneca AB  
Gärtunavägen  
151 85 Södertälje  
Sweden

**B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**

Medicinal product subject to restricted medical prescription (see Annex I: Summary of Product Characteristics, section 4.2).

**C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION**

- **Periodic safety update reports (PSURs)**

The requirements for submission of PSURs for this medicinal product are set out in the list of Union reference dates (EURD list) provided for under Article 107c(7) of Directive 2001/83/EC and any subsequent updates published on the European medicines web-portal.

The marketing authorisation holder (MAH) shall submit the first PSUR for this product within 6 months following authorisation.

**D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT**

- **Risk management plan (RMP)**

The marketing authorisation holder (MAH) shall perform the required pharmacovigilance activities and interventions detailed in the agreed RMP presented in Module 1.8.2 of the marketing authorisation and any agreed subsequent updates of the RMP.

An updated RMP should be submitted:

- At the request of the European Medicines Agency;
- Whenever the risk management system is modified, especially as the result of new information being received that may lead to a significant change to the benefit/risk profile or as the result of an important (pharmacovigilance or risk minimisation) milestone being reached.



**ANNEX III**  
**LABELLING AND PACKAGE LEAFLET**

## **A. LABELLING**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON****1. NAME OF THE MEDICINAL PRODUCT**

Saphnelo 300 mg concentrate for solution for infusion  
anifrolumab

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each vial of 2 mL of concentrate contains 300 mg of anifrolumab (150 mg/mL).

**3. LIST OF EXCIPIENTS**

Excipients: histidine, histidine hydrochloride monohydrate, lysine hydrochloride, trehalose dihydrate, polysorbate 80, water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Concentrate for solution for infusion  
1 vial

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For intravenous use after dilution.  
Read the package leaflet before use.  
For single use.

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

Keep out of the sight and reach of children.

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

EXP

**9. SPECIAL STORAGE CONDITIONS**

Store in a refrigerator.  
Do not freeze or shake.  
Store in the original package in order to protect from light.

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

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

AstraZeneca AB  
SE-151 85 Södertälje  
Sweden

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

EU/1/21/1623/001                      1 vial

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

Justification for not including Braille accepted.

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

2D barcode carrying the unique identifier included.

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

PC  
SN  
NN

<b>MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS</b> <b>VIAL LABEL</b>
----------------------------------------------------------------------------------------------

<b>1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION</b>
------------------------------------------------------------------------

Saphnelo 300 mg sterile concentrate  
anifrolumab  
IV

<b>2. METHOD OF ADMINISTRATION</b>
------------------------------------

<b>3. EXPIRY DATE</b>
-----------------------

EXP

<b>4. BATCH NUMBER</b>
------------------------

Lot

<b>5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT</b>
----------------------------------------------------

2 mL

<b>6. OTHER</b>
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AstraZeneca

## **B. PACKAGE LEAFLET**

## Package leaflet: Information for the patient

### Saphnelo 300 mg concentrate for solution for infusion anifrolumab

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

**Read all of this leaflet carefully before you are given this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor or nurse.
- If you get any side effects, talk to your doctor or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

#### What is in this leaflet

1. What Saphnelo is and what it is used for
2. What you need to know before you are given Saphnelo
3. How Saphnelo is used
4. Possible side effects
5. How to store Saphnelo
6. Contents of the pack and other information

#### 1. What Saphnelo is and what it is used for

##### What Saphnelo is

Saphnelo contains the active substance anifrolumab, a ‘monoclonal antibody’ (a type of specialised protein that attaches to a specific target in the body).

##### What Saphnelo is used for

Saphnelo is used to treat **moderate to severe lupus** (systemic lupus erythematosus, SLE) in adults whose disease is not well controlled by standard therapies (‘oral corticosteroids’, ‘immunosuppressants’ and/or ‘antimalarials’).

You will be given Saphnelo as well as your standard therapy for lupus.

Lupus is a disease in which the system that fights infections (the immune system) attacks your own cells and tissues. This causes inflammation and organ damage. It can affect almost any organ in the body, including skin, joints, kidneys, brain and other organs. It can cause pain, rashes, swelling in joints, fevers and make you feel very tired or weak.

##### How Saphnelo works

People with lupus have high levels of proteins called ‘type I interferons’ which stimulate the activity of the immune system. Anifrolumab attaches to a target (receptor) that these proteins act on, stopping them from working. Blocking their action in this way can reduce the inflammation in your body that causes the signs of lupus.

##### The benefits of using Saphnelo

Saphnelo may help to reduce your lupus disease activity and reduce the number of lupus flares you have. If you are taking medicines called ‘oral corticosteroids’, using Saphnelo may also allow your doctor to reduce the daily dose of oral corticosteroids that is needed to help control your lupus.

## 2. What you need to know before you are given Saphnelo

### You should not be given Saphnelo

- if you are allergic to anifrolumab or any of the other ingredients of this medicine (listed in section 6). Talk to your doctor or nurse if you are not sure.

### Warnings and precautions

#### Talk to your doctor or nurse before you are given Saphnelo:

- if you think you have had an **allergic reaction** to this medicine at any time (see below under ‘Look out for signs of serious allergic reactions and infections’).
- if you get an infection or have symptoms of an **infection** (see below under ‘Look out for signs of serious allergic reactions and infections’).
- if you have a long-term infection or if you have an infection that keeps coming back.
- if your lupus affects your kidneys or nervous system.
- if you have, or have had, cancer.
- if you have recently had an immunisation (vaccine) or plan to have one. You should not be given certain types of vaccines (‘live’ or ‘live attenuated’ vaccines) while being treated with this medicine.
- if you are receiving another biologic medicinal product (such as belimumab for your lupus).

If you are not sure if any of the above applies to you, talk to your doctor or nurse before you are given Saphnelo.

### Look out for signs of serious allergic reactions and infections

Saphnelo may cause **serious allergic reactions (anaphylaxis)** see section 4. **Get medical attention immediately** if you think you may be having a serious allergic reaction. Signs may include:

- swelling of your face, tongue, or mouth
- breathing difficulties
- feeling faint, dizzy or lightheaded (due to a drop in blood pressure).

You may be more at risk of getting an **infection** when you are being treated with Saphnelo. **Tell your doctor or nurse as soon as possible** if you notice signs of any possible infection, including:

- fever or flu-like symptoms
- muscle aches
- cough or feeling short of breath (these may be signs of an infection in your airways, see section 4)
- burning when you urinate or passing urine more often than usual
- diarrhoea or stomach pain
- red skin rash that can cause pain and burning (this may be a sign of shingles, see section 4).

### Children and adolescents

Do not give this medicine to children and adolescents less than 18 years of age because it has not been studied in this age group.

### Other medicines and Saphnelo

- Tell your doctor if you are taking, have recently taken or might take any other medicines.
- Tell your doctor if you have recently had or are going to have a vaccination. You should not be given certain types of vaccines while using this medicine. If you are not sure, talk to your doctor or nurse before and during treatment with Saphnelo.

### Pregnancy and Breast-feeding

If you are pregnant or breast-feeding, think you may be pregnant or are planning to have a baby, ask your doctor for advice before taking this medicine.



### **Pregnancy**

It is not known if Saphnelo can harm your unborn baby.

- **Before you start treatment with Saphnelo, tell your doctor if you are pregnant** or think you may be pregnant. Your doctor will decide if you can be given this medicine.
- **Talk to your doctor if you plan to become pregnant** while being treated with this medicine.
- **If you become pregnant** while being treated with Saphnelo, tell your doctor. They will discuss with you whether you should stop treatment with this medicine.

### **Breast-feeding**

- **Before you start treatment with Saphnelo, tell your doctor if you are breast-feeding.** It is not known whether this medicine is passed into breast milk. Your doctor will discuss with you whether you should stop treatment with this medicine while you are breast-feeding, or if you should stop breast-feeding.

### **Driving and using machines**

It is unlikely that this medicine will affect your ability to drive and use machines.

## **3. How Saphnelo is used**

A nurse or doctor will give you Saphnelo.

- The recommended dose is 300 mg.
- It is given through a drip into a vein (intravenous infusion) over 30 minutes.
- It is given every 4 weeks.

**If you miss an appointment** to get Saphnelo call your doctor as soon as possible to make another appointment.

### **Stopping treatment with Saphnelo**

Your doctor will decide if you need to stop being treated with this medicine.

If you have any further questions on the use of this medicine, ask your doctor or nurse.

## **4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

### **Serious allergic reactions:**

Serious allergic reactions (anaphylaxis) are uncommon (may affect up to 1 in 100 people). **Get medical attention immediately, or go to the nearest emergency department**, if you get any of the following signs of a serious allergic reaction:

- swelling of your face, tongue, or mouth
- breathing difficulties
- feeling faint, dizzy or lightheaded (due to a drop in blood pressure).

### **Other side effects:**

Tell your doctor or nurse if you get any of the following side effects.

**Very common** (may affect more than 1 in 10 people)

- infections of the nose or throat
- chest infection (*bronchitis*)

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

- infections of the sinuses or lungs
- shingles (*herpes zoster*) - a red skin rash that can cause pain and burning
- allergic (*hypersensitivity*) reactions
- infusion reactions - can happen at the time of the infusion or shortly after; symptoms may include headache, feeling sick (*nausea*), being sick (*vomiting*), feeling very tired or weak (*fatigue*) and feeling dizzy

### Reporting of side effects

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

## 5. How to store Saphnelo

The doctor, nurse or pharmacist is responsible for storing this medicine. The storage details are as follows:

- Do not use this medicine after the expiry date which is stated on the vial label and carton after EXP. The expiry date refers to the last day of that month.
- Keep this medicine out of the sight and reach of children.
- Store in a refrigerator (2°C – 8°C).
- Do not freeze or shake.
- Store in the original package to protect from light.

## 6. Contents of the pack and other information

### What Saphnelo contains

- The **active substance** is anifrolumab. Each vial contains 300 mg anifrolumab.
- The **other ingredients** are histidine, histidine hydrochloride monohydrate, lysine hydrochloride, trehalose dihydrate, polysorbate 80 and water for injections.

### What Saphnelo looks like and contents of the pack

Saphnelo is supplied as a clear to opalescent, colourless to slightly yellow concentrate solution.

Saphnelo is available in packs containing 1 vial.

### Marketing Authorisation Holder

AstraZeneca AB  
SE-151 85 Södertälje  
Sweden

### Manufacturer

AstraZeneca AB  
Gärtunavägen  
SE-151 85 Södertälje  
Sweden

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

**België/Belgique/Belgien**

AstraZeneca S.A./N.V.

Tel: +32 2 370 48 11

**България**

АстраЗенека България ЕООД

Тел.: +359 24455000

**Česká republika**

AstraZeneca Czech Republic s.r.o.

Tel: +420 222 807 111

**Danmark**

AstraZeneca A/S

Tlf: +45 43 66 64 62

**Deutschland**

AstraZeneca GmbH

Tel: +49 40 809034100

**Eesti**

AstraZeneca

Tel: +372 6549 600

**Ελλάδα**

AstraZeneca A.E.

Τηλ: +30 210 6871500

**España**

AstraZeneca Farmacéutica Spain, S.A.

Tel: +34 91 301 91 00

**France**

AstraZeneca

Tél: +33 1 41 29 40 00

**Hrvatska**

AstraZeneca d.o.o.

Tel: +385 1 4628 000

**Ireland**

AstraZeneca Pharmaceuticals (Ireland) DAC

Tel: +353 1609 7100

**Ísland**

Vistor hf.

Sími: +354 535 7000

**Italia**

AstraZeneca S.p.A.

Tel: +39 02 00704500

**Κύπρος**

Αλέκτωρ Φαρμακευτική Λτδ

Τηλ: +357 22490305

**Lietuva**

UAB AstraZeneca Lietuva

Tel: +370 5 2660550

**Luxembourg/Luxemburg**

AstraZeneca S.A./N.V.

Tél/Tel: +32 2 370 48 11

**Magyarország**

AstraZeneca Kft.

Tel.: +36 1 883 6500

**Malta**

Associated Drug Co. Ltd

Tel: +356 2277 8000

**Nederland**

AstraZeneca BV

Tel: +31 79 363 2222

**Norge**

AstraZeneca AS

Tlf: +47 21 00 64 00

**Österreich**

AstraZeneca Österreich GmbH

Tel: +43 1 711 31 0

**Polska**

AstraZeneca Pharma Poland Sp. z o.o.

Tel.: +48 22 245 73 00

**Portugal**

AstraZeneca Produtos Farmacêuticos, Lda.

Tel: +351 21 434 61 00

**România**

AstraZeneca Pharma SRL

Tel: +40 21 317 60 41

**Slovenija**

AstraZeneca UK Limited

Tel: +386 1 51 35 600

**Slovenská republika**

AstraZeneca AB, o.z.

Tel: +421 2 5737 7777

**Suomi/Finland**

AstraZeneca Oy

Puh/Tel: +358 10 23 010

**Sverige**

AstraZeneca AB

Tel: +46 8 553 26 000

**Latvija**  
SIA AstraZeneca Latvija  
Tel: +371 67377100

**United Kingdom (Northern Ireland)**  
AstraZeneca UK Ltd  
Tel: +44 1582 836 836

**This leaflet was last revised in**

### **Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>

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### **The following information is intended for healthcare professionals only:**

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

Saphnelo is supplied as a single-dose vial. The solution for infusion should be prepared and administered by a healthcare professional, using aseptic technique as follows:

#### Preparation of solution

1. Visually inspect the vial for particulate matter and discolouration. Saphnelo is a clear to opalescent, colourless to slightly yellow solution. Discard the vial if the solution is cloudy, discoloured or visible particles are observed. Do not shake the vial.
2. Dilute 2.0 mL of the Saphnelo solution for infusion in an infusion bag to 100 mL with sodium chloride 9 mg/mL (0.9%) solution for injection.
3. Mix the solution by gentle inversion. Do not shake.
4. Any concentrate remaining in the vial must be discarded.
5. From a microbiological point of view, once diluted the medicinal product should be used immediately. If not used immediately, chemical and physical in-use stability has been demonstrated for 24 hours at 2°C – 8°C or for 4 hours at room temperature. Discard the diluted solution if not used within that time.

If not used immediately, in-use storage times and conditions prior to use are the responsibility of the user.

#### Administration

1. It is recommended that the solution for infusion be administered immediately after preparation. If the solution for infusion has been stored in a refrigerator, allow it to reach room temperature (15°C to 25°C) prior to administration.
2. Administer the infusion solution intravenously over 30 minutes through an intravenous line containing a sterile, low-protein binding 0.2 or 0.22 micron in-line filter.
3. Upon completion of the infusion, flush the infusion set with 25 mL sodium chloride 9 mg/mL (0.9%) solution for injection to ensure that all of the solution for infusion has been administered.
4. Do not co-administer other medicinal products through the same infusion line.

### Disposal

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