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# TARGETING TYPE I INTERFERON SIGNALING IN SYSTEMIC LUPUS ERYTHEMATOSUS: CLINICAL AND SAFETY PERSPECTIVES ON ANIFROLUMAB THERAPY

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**ABSTRACT**

Anifrolumab is a fully human IgG1 monoclonal antibody targeting the IFNAR1 subunit of the type I interferon receptor. By inhibiting the JAK-STAT signaling pathway and suppressing interferon-stimulated gene expression, anifrolumab represents a targeted therapy based on disease pathophysiology. The drug has been approved as an add-on treatment for adult patients with moderate to severe systemic lupus erythematosus particularly in patients in whom standard therapies such as systemic glucocorticoids and hydroxychloroquine have failed to achieve the desired outcomes.

The efficacy of anifrolumab has been assessed in several randomized clinical trials, which demonstrated a significant reduction in disease activity, decreased rates of disease flares, and improvement in cutaneous and musculoskeletal manifestations. Another clinically relevant outcome was the possibility to reduce glucocorticosteroid doses. Further analyses also suggest a beneficial effect of anifrolumab in lupus nephritis and indicate its superiority over standard therapy. Anifrolumab has demonstrated a favorable safety profile, with no significant increase in the risk of serious adverse events or opportunistic infections. The most frequently reported adverse events were upper respiratory tract infections as well as varicella and herpes zoster infections.

In Poland, anifrolumab is registered exclusively for the treatment of adults with moderate to severe systemic lupus erythematosus as an adjunct to standard therapy. However, evidence from clinical trials and case series suggest the potential for broader application of this drug in dermatology in the coming years. In the future, anifrolumab may also be considered a therapeutic option in refractory cases of cutaneous lupus erythematosus.

**KEYWORDS**

Systemic Lupus Erythematosus, Anifrolumab, Biological Therapy, Interferon Type I, Clinical Trials, Phase III

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## Introduction

Systemic lupus erythematosus (SLE) is a chronic, multisystem autoimmune disease characterized by loss of immunological tolerance, autoantibody production, immune complex deposition, and variable organ involvement [1]. Despite advances in immunosuppressive therapy, SLE remains associated with significant morbidity, organ damage, and increased mortality. Standard treatment strategies including glucocorticoids, antimalarials, and conventional immunosuppressive agents are often limited by incomplete disease control, treatment resistance, and long-term toxicity, particularly steroid-related complications [2].

Over the past decade, increasing understanding of SLE immunopathogenesis has highlighted the central role of type I interferon signaling in driving systemic inflammation and disease activity. A substantial proportion of patients with moderate to severe SLE exhibit an elevated type I interferon gene signature, which correlates with disease severity and organ involvement. These insights have led to the development of targeted biologic therapies aimed at interrupting interferon-mediated immune dysregulation [3].

Anifrolumab, a fully human monoclonal antibody targeting the interferon-α receptor subunit 1 (IFNAR1), represents the first approved therapy specifically designed to inhibit the type I interferon pathway in SLE [4]. Clinical trials have demonstrated its efficacy in reducing global disease activity, improving mucocutaneous manifestations, and enabling glucocorticoid tapering, with an acceptable safety profile [5].

## Aim of the study

The aim of this narrative review is to summarize the current evidence regarding the mechanism of action, clinical efficacy, safety profile, and potential future applications of anifrolumab in patients with SLE. The focus of the analysis is placed on the drug's mechanism of action within the type I interferon pathway, its clinical efficacy across disease domains, and its safety profile during both short-term and long-term use. This review also discusses unresolved clinical questions, and the potential future role of anifrolumab in expanding therapeutic options for patients with SLE.

## Methods

This narrative review was conducted following the methodological guidelines for non-systematic reviews, with elements incorporated from PRISMA to improve transparency and reproducibility, and SANRA to ensure methodological integrity. A comprehensive literature search was conducted using PubMed and Google Scholar between January 2025 and February 2026. The search strategy combined MeSH terms and free-text keywords using Boolean operators. The search strategy included: ("anifrolumab" OR "anti-IFNAR1") AND ("systemic lupus erythematosus" OR "SLE") AND ("type I interferon" OR "interferon pathway" OR "IFN signature") AND ("clinical trial" OR "efficacy" OR "safety" OR "TULIP"). Additional terms such as “cutaneous lupus”, “biologic therapy”, and “lupus nephritis” were used to broaden the scope where relevant. Reference lists from chosen articles, pivotal clinical trials (including MUSE, TULIP-1, TULIP-2, and TULIP-LTE), and international guidelines (e.g., EULAR recommendations) were manually screened to identify additional eligible studies. Publications from January 2010 to December 2025 were considered, as well as earlier foundational studies were included to provide essential background.

**The inclusion criteria were:** peer-reviewed articles published in English, randomized controlled trials, phase II and III clinical trials, and long-term extension studies, meta-analyses and systematic reviews, observational studies and real-world evidence reports, narrative reviews and expert consensus guidelines relevant to SLE and interferon signaling, studies addressing mechanism of action, clinical efficacy, safety, or therapeutic positioning of anifrolumab. **The exclusion criteria were:** non-English publications, case reports with limited generalizability, conference abstracts without full-text availability, studies with insufficient methodological quality or unclear outcome reporting, publications not directly related to anifrolumab or type I interferon pathway in SLE.

Titles and abstracts were screened for relevance, followed by full-text assessment of potentially eligible articles. Priority was given to high-quality evidence, particularly randomized controlled trials and large-scale studies. Although this is a narrative review, a hierarchical approach to evidence appraisal was applied. Studies were evaluated based on design, sample size, methodological rigor, and risk of bias. The hierarchy of evidence was as follows: phase III randomized controlled trials (e.g., TULIP-2), phase II trials (e.g., MUSE), long-term extension studies, meta-analyses and systematic reviews, observational and real-world studies, expert opinion and narrative reviews. Data were synthesized qualitatively with a focus on consistency, clinical relevance, and translational applicability. Particular attention was given to: differences in trial design (e.g., endpoint selection in TULIP-1 vs TULIP-2), variability among patient groups (e.g., interferon gene signature status), limitations of external validity due to restrictive inclusion criteria. A thorough evaluation was conducted to identify potential biases, knowledge gaps, and unanswered clinical questions, such as the absence of comparison with other biologic therapies and limited long-term real-world data.

## Mechanism of Action

### Type I Interferon Pathway in SLE Pathogenesis

In SLE the body does not efficiently clear apoptotic cells and cellular debris therefore endogenous nucleic acids accumulate and can form immune complexes. These complexes activate plasmacytoid dendritic cells, which leads to an increased production of interferons and then further amplifies the immune response. Type I interferons, particularly IFN-α, play a central role in the pathogenesis of SLE. Approximately 60-80% of patients with SLE demonstrate an elevated type I interferon gene signature. It is characterized by upregulation of interferon-stimulated genes in peripheral blood mononuclear cells. This interferon signature correlates with disease severity, activity, and risk of organ involvement including nephritis [6]. Dysregulation of this pathway is driven primarily by plasmacytoid dendritic cells activated by nucleic acid containing immune complexes and apoptotic material, leading to toll-like receptor (TLR7/9)–mediated overproduction of interferon-α. Neutrophil extracellular traps further contribute to sustained immune activation. Genetic susceptibility amplifies interferon pathway activation, with risk variants in STAT4, IRF5, IRF7, and TYK2 promoting enhanced interferon signaling [7,8]. Type I interferons promote maturation of dendritic cells, autoreactive T-cell activation, and B-cell differentiation, resulting in increased autoantibody production and germinal center formation. They also induce proinflammatory cytokines and chemokines, facilitating immune cell recruitment and tissue damage in target organs [9].

**Molecular Mechanism of Anifrolumab**

Anifrolumab targets the type I interferon pathway, which plays a crucial role in the pathogenesis of SLE. It ia a fully human monoclonal antibody that binds to interferon-α receptor subunit 1 (IFNAR1). By binding to that, anifrolumab prevents signaling from multiple interferon subtypes, including IFN-α, IFN-β, and IFN-ω [10]. This particular mechanism distinguishes it from therapies that target only one interferon molecule. By blocking the shared receptor, an inhibition of the entire type I signaling pathway is possible. Blocking IFNAR1 disrupts signaling cascades that are normally triggered when type I interferons bind to their receptor. As a result, several interferon-driven processes are suppressed [11]. One of the most notable effects is the reduction of the interferon gene signature, which is a characteristic pattern of interferon-stimulated gene expression observed in many patients with lupus and is associated with disease activity. In addition, inhibition of this pathway leads to decreased production of proinflammatory cytokines and chemokines and downregulation of multiple immune pathways involved in apoptosis, neutrophil extracellular trap formation, and B-cell activation. These molecular effects translate into clinically relevant outcomes. By dampening interferon-mediated immune activation, anifrolumab reduces systemic and organ-specific inflammation and contributes to overall disease control. Clinical studies have shown that treatment can lower disease activity and help patients reduce their reliance on glucocorticoids, which are commonly used in lupus but associated with significant long-term adverse effects [12]. Pharmacokinetic and pharmacodynamic analyses provide further insight into how the drug achieves these effects. Treatment with anifrolumab at a dose of 300 mg administered intravenously every four weeks results in sustained neutralization of the interferon pathway, with more than 80% suppression of the 21-gene interferon signature observed in many patients. Importantly, clinical responses such as improvement measured by the BICLA (British Isles Lupus Assessment Group–based Composite Lupus Assessment) have been shown to correlate with the degree of interferon pathway suppression. In addition to the intravenous formulation, a subcutaneous formulation of anifrolumab has also been investigated. Weekly subcutaneous dosing at 120 mg has demonstrated comparable efficacy and safety to the intravenous regimen, offering a potentially more convenient administration option for patients requiring long-term therapy [13].

**Safety**

**Overview of Adverse Event Profile**

Anifrolumab demonstrates a generally favorable safety profile in adults with moderate to severe, non-renal, non-neuropsychiatric SLE, with the most common adverse effects being upper respiratory tract infections, nasopharyngitis, bronchitis, herpes zoster, and infusion-related reactions. These events occur more frequently with anifrolumab than with placebo, with herpes zoster representing a notable risk (6.1% vs 1.3% in placebo across pooled trials), typically presenting as cutaneous disease that resolves with standard antiviral therapy. Cases with multidermatomal involvement and disseminated presentation have been reported, with two cases requiring hospitalization in clinical trials [14,15].

Other common adverse effects include urinary tract infections, sinusitis, arthralgia, back pain, and cough. Notably, serious adverse events are paradoxically less frequent with anifrolumab compared to placebo (8.3% vs 17.0% in TULIP-2), leading to better disease control and fewer SLE flares in the treatment group. Discontinuation due to adverse events is uncommon (2.8% in TULIP-2). Non-opportunistic serious infections, including pneumonia, occur at comparable or lower rates than placebo (exposure-adjusted incidence rates of 3.7 vs 3.6 per 100 patient-years in long-term extension studies) [16,17].

**Hypersensitivity and Infusion-Related Reactions**

Hypersensitivity reactions, including rare serious events such as anaphylaxis and angioedema, have been reported (2.8% overall incidence in controlled trials vs 0.6% with placebo). Serious hypersensitivity reactions occurred in 0.6% of patients, including two cases of angioedema. Infusion-related reactions were generally mild to moderate in intensity, with the most common symptoms being headache, nausea, vomiting, fatigue, and dizziness (9.4% vs 7.1% with placebo). These reactions rarely led to treatment discontinuation [18].

**Long-Term Safety Data**

Long-term extension studies have provided reassuring evidence regarding the sustained safety profile of Anifrolumab. Data from a three-year placebo-controlled extension study the longest placebo-controlled trial conducted to date in patients with SLE did not identify any new safety signals during prolonged treatment. Importantly, exposure-adjusted incidence rates of serious adverse events remained lower in patients receiving anifrolumab compared with placebo (8.5 vs 11.2 per 100 patient-years). In addition, the rates of adverse events leading to treatment discontinuation were similar uybetween the two groups (2.5 vs 3.2 per 100 patient-years), further supporting the overall stability of the drug’s safety profile over long-term use [19,20].

## Efficacy

### Overview of Clinical Efficacy

Anifrolumab demonstrates clinically meaningful and statistically significant efficacy in adults with moderate to severe, non-renal, non-neuropsychiatric SLE, as established in the pivotal TULIP-2 phase 3 trial and confirmed across multiple studies. Monthly intravenous administration of anifrolumab 300 mg results in superior composite disease activity response, enhanced glucocorticoid tapering, and improved organ-specific outcomes, particularly in mucocutaneous manifestations, with benefits most pronounced in patients with high type I interferon gene signatures [4,21]

### TULIP-2: The Landmark Phase 3 Trial

The TULIP-2 trial was a randomized, double-blind, placebo-controlled phase 3 study enrolling 362 adults with moderate to severe SLE, excluding those with active severe lupus nephritis or neuropsychiatric involvement. Patients were required to have serologic evidence of SLE (positive anti-nuclear antibodies or anti-dsDNA antibodies) and active disease (SLEDAI-2K ≥6, BILAG A or B scores, and Physician's Global Assessment ≥1) despite standard therapy. Participants were randomized 1:1 to receive intravenous anifrolumab 300 mg or placebo every 4 weeks for 48 weeks, with the primary endpoint being the BICLA response at week 52.

Anifrolumab achieved a BICLA response in 47.8% of patients versus 31.5% with placebo (difference 16.3 percentage points; 95% CI, 6.3 to 26.3; P=0.001). The effect was consistent across interferon gene signature subgroups, with 48.0% vs 30.7% response rates in patients with high interferon signatures and 46.7% vs 35.5% in those with low signatures, though the trial was not powered for subgroup analyses.

Key secondary endpoints demonstrated that anifrolumab facilitated sustained glucocorticoid reduction to ≤7.5 mg/day prednisone equivalent (51.5% vs 30.2%) and achieved ≥50% improvement in cutaneous lupus activity as measured by the Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) (49.0% vs 25.0%). Improvements in swollen and tender joint counts and annualized flare rates did not reach statistical significance in TULIP-2, though pooled analyses across trials showed benefits in these domains [21,22].

### Pooled Analyses and Consistency Across Trials

Pooled data from the TULIP-1 and TULIP-2 trials (n=726 patients) demonstrate that anifrolumab consistently improves composite disease activity scores, reduces annualized flare rates, and enables sustained glucocorticoid tapering compared to placebo. These improvements extend across multiple organ domains, particularly mucocutaneous and musculoskeletal involvement, with rapid and substantial reductions in cutaneous lupus activity observed as early as week 8 and sustained through week 52. The consistency of findings across trials strengthens the evidence base, despite TULIP-1 not meeting its primary endpoint (SRI-4 response), likely due to differences in endpoint selection and trial design.

### Long-Term Efficacy and Disease Remission

Long-term extension studies demonstrate that anifrolumab maintains efficacy over several years, with higher rates of lupus low disease activity state (LLDAS) and DORIS (Definition of Remission in SLE) remission compared to placebo. In the recent TULIP-SC trial of subcutaneous anifrolumab, DORIS remission was achieved in 14.2% more patients with anifrolumab versus placebo (p=0.0012), and LLDAS attainment rates favored anifrolumab by 14.1% (p=0.0038). Patients spent significantly more cumulative time in these favorable disease states, suggesting durable disease control. Sustained neutralization of the interferon gene signature correlates with ongoing clinical benefit, and pharmacokinetic analyses confirm that the approved 300 mg IV every 4 weeks regimen achieves optimal target engagement and efficacy without increased safety risk. Higher average serum concentrations predict greater efficacy, though consistent positive benefits are observed across concentration subgroups, and there is no evidence of exposure-driven safety events [1,10].

### Glucocorticoid-Sparing Effects

Glucocorticoid reduction represents a critical therapeutic goal in SLE management given the substantial morbidity associated with chronic corticosteroid use. Post-hoc analyses of the TULIP trials demonstrate that sustained glucocorticoid tapering (to ≤7.5 mg/day by week 40 sustained through week 52) was achieved by 51% of anifrolumab-treated patients versus 32% receiving placebo among those on ≥10 mg/day at baseline. Sustained glucocorticoid taper responders reduced their mean cumulative glucocorticoid dose by 32%, improved patient-reported outcomes, reduced blood pressure, and experienced fewer serious adverse events compared to non-responders. Importantly, 38% of anifrolumab-treated patients achieved both sustained glucocorticoid taper and reduced overall disease activity, compared to 23% with placebo. Anifrolumab was associated with lower cumulative glucocorticoid use over the long-term extension period [16].

**Summary**

The totality of evidence from randomized controlled trials, long-term extension studies, pooled analyses, and real-world data supports that anifrolumab provides clinically meaningful improvements in global and organ-specific disease activity, flare prevention, glucocorticoid reduction, and prevention of organ damage in adults with moderate to severe, non-renal, non-neuropsychiatric SLE. The therapy demonstrates durable efficacy with a favorable benefit-risk profile in long-term use, particularly in patients with high type I interferon gene signatures and prominent mucocutaneous manifestations [23,24].

**Table 1.** Comparison of five major anifrolumab trials in systemic lupus erythematosus.

| Study | Phase | Population | Intervention | Primary Endpoint | Key Results |
|---|---|---|---|---|---|
| MUSE | 2b | moderate-severe SLE (n=305) | Anifrolumab 300mg or 1000mg iv vs placebo q4w | SRI-4 response at week 24 with susteined oral corticosteroid reduction | 34.3% (300 mg) and 28.8% (1000 mg) vs 17.6% (placebo) |
| TULIP-1 | 3 | moderate-severe SLE n=364 | 300mg iv vs placebo q4w | SRI-4 response at week 52 | Primary endpoint not met |
| TULIP-2 | 3 | moderate-severe SLE n=362 | 300mg iv q4w | BICLA response at week 52 | 47.8% vs 31.5%(placebo), significant glucocorticoid reduction and significant skin improvement |
| TULIP-LTE | 3 long-term extension | adults who completed TULIP-1 or TULIP-2 n=369 | 300mg iv vs placebo q4w, for three years | patient-reported outcomes | At week 208: LLDAS attainment 36.9% vs 17.1% (placebo) |
| TULIP-SC | 3 | moderate-severe SLE n=367 | Anifrolumab 120mg sc vs placebo q1w | BICLA response at week 52 | 59.4% vs 43.9% (placebo) |

**Primary Target Population**

Anifrolumab is approved for adults with moderate to severe SLE who are receiving standard therapy, specifically excluding patients with severe active lupus nephritis or active central nervous system lupus [25]. The pivotal TULIP trials enrolled patients with serologically active disease (positive anti-nuclear antibodies or anti-dsDNA antibodies), active disease manifestations (SLEDAI-2K ≥6, BILAG A or B scores, and Physician's Global Assessment ≥1), and persistent disease activity despite standard immunosuppressive therapy and glucocorticoids [4,26].

**Interferon Gene Signature Status**

The most robust predictor of anifrolumab response is the presence of a high type I interferon gene signature at baseline, which is present in approximately 80-85% of patients with moderate to severe SLE. In the phase 2 MUSE trial, patients with high interferon signatures demonstrated substantially greater response rates to anifrolumab 300 mg compared to placebo (36.0% vs 13.2% for the primary endpoint), with a P-value of 0.004. Similarly, in TULIP-2, the BICLA response rate among patients with high interferon signatures was 48.0% with anifrolumab versus 30.7% with placebo (adjusted difference 17.3 percentage points; 95% CI, 6.5 to 28.2; P=0.002) [27].

However, clinical efficacy has also been observed in patients with low interferon gene signatures, though the evidence base is more limited due to smaller patient numbers. In TULIP-2, patients with low interferon signatures achieved BICLA response rates of 46.7% with anifrolumab versus 35.5% with placebo (adjusted difference 11.2 percentage points; 95% CI, −13.5 to 35.8), though this subgroup analysis was not powered for statistical significance. The observation that anifrolumab demonstrates efficacy across interferon signature subgroups suggests that type I interferon pathway blockade may provide clinical benefit through mechanisms beyond simple suppression of the interferon gene signature, or that the 21-gene signature test may not fully capture all patients with interferon pathway activation [28,29].

**Organ-Specific Manifestations**

Anifrolumab demonstrates particularly robust efficacy in patients with prominent mucocutaneous involvement. In clinical trials, most enrolled patients had musculoskeletal or mucocutaneous domain involvement, and effects in patients with refractory cutaneous lupus were described as "particularly rapid and substantial." Among patients with at least moderately active skin disease (CLASI ≥10) at baseline in TULIP-2, 49.0% of anifrolumab-treated patients achieved ≥50% reduction in CLASI at week 12 compared to 25.0% with placebo (adjusted difference 24.0 percentage points; 95% CI, 4.3 to 43.6; P=0.04). This rapid onset of action in cutaneous manifestations distinguishes anifrolumab from other SLE therapies and suggests particular utility in patients with disfiguring or treatment-refractory skin disease [30-32].

While musculoskeletal improvements were observed in pooled analyses across trials, individual trial results for joint outcomes were mixed, with TULIP-2 not demonstrating statistically significant improvements in swollen and tender joint counts. This suggests that anifrolumab may be most beneficial for patients with prominent skin involvement rather than those with predominantly articular disease. Although the current evidence supports the clinical utility of anifrolumab in SLE, available data are primarily derived from controlled clinical trials with selected patient populations. Real-world effectiveness across heterogeneous clinical settings and long-term safety outcomes beyond current extension studies require further investigation. Future research should focus on head-to-head comparisons with other biologic therapies and refinement of biomarker-guided treatment strategies to optimize patient selection and therapeutic outcomes [33-35]. Maybe in the near future anifrolumab will be used more for different types in SLE just like now ocrelizumab is used in different forms of systemic sclerosis [36].

**Discussion**

SLE still remains a disease in which achieving sustained disease control continues to be a major therapeutic challenge. Despite the use of glucocorticoids, antimalarials, and immunosuppressive agents, many patients fail to achieve remission or low disease activity [37]. That’s why targeted therapies are an important advancement in SLE management.

The type I interferon pathway has emerged as a central driver of immune dysregulation in SLE. This is supported by the fact that most patients have a specific interferon gene pattern, which is also linked to how active the disease is and which organs are affected [38,39]. Anifrolumab offers a mechanistically distinct approach compared to therapies directed at individual cytokines [27].

Evidence from randomized clinical trials, particularly the TULIP-2 study, demonstrates that anifrolumab provides statistically significant and clinically meaningful improvements in global disease activity. Using the BICLA endpoint, which reflects meaningful improvements across multiple organ systems, likely helped demonstrate efficacy more clearly than in TULIP-1, underscoring how critical endpoint selection is in SLE trials [40]. Pooled analyses also show that the benefits of anifrolumab go beyond composite endpoints, with fewer disease flares and clear improvements in specific organ manifestations [42].

One of the most clinically relevant findings is the glucocorticoid-sparing effect of anifrolumab.Because long-term corticosteroid use is strongly linked to permanent organ damage, being able to lower steroid doses without losing control of the disease is a significant therapeutic benefit [43]. It’s also worth noting that the rapid and marked improvement seen in cutaneous lupus erythematosus suggests anifrolumab may be especially helpful for patients with prominent mucocutaneous involvement. The interferon gene signature is an important biomarker to consider. While patients with a high signature tend to benefit the most, responses have also been seen in those with lower levels [41]. This suggests we still don’t fully capture how the interferon pathway is activated, and that better ways of identifying the right patients are needed [38,39].

Overall, anifrolumab appears to be well tolerated, with a consistent safety profile across trials and long-term studies. Serious adverse events don’t seem to occur more often than with placebo and in some analyses, they’re actually less frequent [18]. Still, the higher risk of viral infections, especially herpes zoster, is something to keep in mind. Despite these encouraging results, some limitations need to be considered. Most of the available evidence comes from randomized clinical trials with strict inclusion criteria, which excluded patients with severe lupus nephritis and neuropsychiatric involvement [41]. In addition, we dont have enough long-term safety data as they are still being collected. A key question is where anifrolumab fits within the current SLE treatment landscape. Another approved targeted biologic therapy for SLE is belimumab [44]. Belimumab targets BAFF and has shown efficacy across a wide range of disease manifestations, including lupus nephritis. In contrast, anifrolumab blocks type I interferon signaling and seems particularly beneficial in patients with prominent skin and musculoskeletal involvement. These differences likely reflect the broader

role of interferon pathways in antiviral defense, which may explain the higher rate of viral infections seen with anifrolumab [45, 46]. We still lack direct comparisons with other biologic therapies, which makes it difficult to judge its relative efficacy or determine the best place for it in treatment sequencing [47]. Because of that, treatment decisions are still largely guided by clinical phenotype, with consideration of organ involvement, infection risk, and treatment goals. The lack of reliable predictive biomarkers, limit the ability to tailor biologic therapy to individual patients. Future studies should aim to fill these gaps and clarify biologics role across different disease phenotypes, including lupus nephritis.

Overall, anifrolumab is an important step forward in SLE management. By targeting the type I interferon pathway, it offers a more precise treatment approach, with proven efficacy and a favorable safety profile. Further research will be essential to better identify which patients benefit most, refine how it's used in practice, and understand its long-term impact.

**Conclusions**

Anifrolumab is a therapy agent targeting the type I interferon pathway in the treatment of SLE, directly addressing a key pathogenic mechanism of the disease. Results from Phase II and III clinical trials confirm its efficacy in reducing global disease activity, limiting the frequency of flare-ups, and enabling clinically significant reductions in glucocorticoid doses. The most pronounced benefits are observed in patients with severe mucocutaneous lesions and a high interferon signature. The safety profile of the drug is favorable, and the most clinically important adverse effect remains an increased risk of varicella zooster virus reactivation, requiring appropriate monitoring. Further studies and analyses with other biological therapies are necessary to precisely determine the place of anifrolumab in long-term SLE treatment algorithms.

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