VENTURA COUNTY
HEALTH CARE PLAN

UTILIZATION MANAGEMENT MEDICAL POLICY

POLICY: Multiple Sclerosis and Crohn's Disease (Injectable – Other) – Natalizumab Products Utilization Management Medical Policy
- Tyruko® (natalizumab-sztn intravenous infusion – Sandoz)
- Tysabri® (natalizumab intravenous infusion – Biogen)

REVIEW DATE: 07/23/2025; selected revision 09/24/2025

OVERVIEW

Natalizumab products (Tysabri, biosimilar) are integrin receptor antagonists indicated for the treatment of:[1,2]

- Relapsing forms of **multiple sclerosis** (MS) which include clinically isolated syndrome, relapsing remitting disease, and active secondary progressive disease in adults as monotherapy.
- **Crohn's disease**, inducing and maintaining clinical response and remission in adults with moderately to severely active disease with evidence of inflammation who have had an inadequate response to, or are unable to tolerate, conventional Crohn's disease therapies and inhibitors of tumor necrosis factor (TNF).

Natalizumab increases the risk of progressive multifocal leukoencephalopathy (PML).[1,2] When initiating and continuing treatment with natalizumab in patients with MS, physicians should consider whether the expected benefit of natalizumab is sufficient to offset the risks. Natalizumab should not be used in combination with immunosuppressants (e.g., azathioprine, 6-mercaptopurine, cyclosporine, methotrexate) or inhibitors of TNFα. The safety and effectiveness in patients with MS or Crohn's disease < 18 years of age have not been established.

Disease Overview

Multiple Sclerosis

MS is a chronic, inflammatory, demyelinating, autoimmune disease of the central nervous system that impacts almost 1,000,000 people in the US.[3-5] The condition is marked by inflammation and demyelination, as well as degenerative alterations. Patients usually experience relapses and remissions in their neurological symptoms. For most patients, the onset of MS symptoms occurs when patients are 20 to 40 years of age; however, children can get MS and new onset disease can occur in older adults. The MS disease course is heterogeneous but has some patterns. Approximately 85% to 90% of patients have a relapsing pattern at onset. However, this transitions over time in patients who are untreated to a worsening with very few or no relapses or magnetic resonance imaging (MRI) activity (secondary progressive MS). Around 10% to 15% of patients have a steady progression of symptoms over time (primary progressive MS), marked by some clinical manifestations or by MRI activity. Primary progressive MS is generally diagnosed in patients on the upper level of the typical age range (e.g., almost 40 years of age) and the distribution is equivalent among the two genders.[3-5] Advances in the understanding of the MS disease process, as well as in MRI technology, spurned updated disease course descriptions in 2013,[6] as well as in 2017.[7] The revised disease courses are clinically isolated syndrome, relapsing remitting MS, primary progressive MS, and secondary progressive MS.[3-5] Clinically isolated syndrome is now more recognized among the course descriptions of MS. It is the first clinical presentation of MS that displays characteristics of inflammatory demyelination that may possibly be MS but has yet to fulfill diagnostic criteria.

Crohn's Disease
Crohn's disease is a chronic inflammatory disease of the gastrointestinal (GI) tract.[8] Any GI tract segment can be impacted; however, the terminal ileum and proximal colon are most commonly involved, typically in a discontinuous, patchy, segmental, and transmural pattern. Common symptoms of Crohn's disease include abdominal pain, diarrhea, fatigue, weight loss, fever, anemia, and recurrent fistulas. Other extraintestinal manifestations may be present in up to 50% of patients (e.g., skin, joint, eye conditions). Notable associated manifestations are arthropathy (axial and peripheral), dermatological (e.g., pyoderma gangrenosum), ocular (uveitis, scleritis), and hepatobiliary disease (e.g., primary sclerosing cholangitis). Younger patients may experience growth failure. The chronic intestinal inflammation over time leads to intestinal complications such as strictures, fistulas, and abscesses. Only 20% to 30% of patients with Crohn's disease will have a nonprogressive or indolent course. Metabolic bone diseases, thromboembolic complications, osteonecrosis, cholelithiasis, and nephrolithiasis may be present as well. Previously, the condition was managed with 5-aminosalicylates, corticosteroids, methotrexate, and immunomodulators (e.g., azathioprine, 6-mercaptopurine). Now, other therapies include biologics and targeted synthetic oral small molecule drugs.

Guidelines
In September 2019, a consensus paper was updated by the MS Coalition that discusses the use of disease-modifying therapies in MS.[3] Many options from various drug classes, involving different mechanisms of action and modes of administration, have shown benefits in patients with MS.

The American College of Gastroenterology has guidelines on management of Crohn's disease in adults (2025).[9] Natalizumab has a limited role in the management of the condition. The recommendations are extensive. Generally, all of the advanced therapies are recommended for induction and maintenance of remission. Advanced therapies recommended include TNF inhibitors, Entyvio® (vedolizumab intravenous infusion and subcutaneous injection), interleukin (IL)-23 inhibitors, IL-12/23 inhibitors, and Rinvoq® (upadacitinib extended-release tablets). It is cited that treatment with natalizumab is best limited to patients who are not seropositive for anti-John Cunningham virus antibody; this should be checked before initiating therapy and at a minimum of once every 6 months thereafter. Due to the availability of other agents with more favorable safety profiles, the other advanced therapies that are indicated for moderate to severe Crohn's disease should be used instead of natalizumab.

Safety
Natalizumab has a Boxed Warning regarding the risk of PML.[1,2] Natalizumab is available only through a special restricted distribution Risk Evaluation and Mitigation Strategy (REMS) program called the TOUCH® Prescribing Program.

POLICY STATEMENT
Prior Authorization is recommended for medical benefit coverage of natalizumab. Approval is recommended for those who meet the **Criteria** and **Dosing** for the listed indications. Extended approvals are allowed if the patient continues to meet the Criteria and Dosing. Requests for doses outside of the established dosing documented in this policy will be considered on a case-by-case basis by a clinician (i.e., Medical Director or Pharmacist). All approvals are provided for the duration noted below. In cases where the approval is authorized in months, 1 month is equal to 30 days. Because of the specialized skills required for evaluation and diagnosis of patients treated with natalizumab as well as the monitoring required for adverse events and long-term efficacy, approval requires natalizumab to be prescribed by or in consultation with a physician who specializes in the condition being treated.

Documentation: Documentation is required for use of natalizumab at initiation for multiple sclerosis as noted in the criteria as **[documentation required]**. Documentation may include, but is not limited to, chart notes, magnetic resonance imaging (MRI) reports, and/or other information. All documentation must include patient-specific identifying information.

Automation: None.

RECOMMENDED AUTHORIZATION CRITERIA

Coverage of natalizumab is recommended in those who meet one of the following criteria:

FDA-Approved Indications

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1. **Multiple Sclerosis.** Approve for 1 year if the patient meets ONE of the following (A or B):
   - **A)** Initial Therapy. Approve if the patient meets ALL of the following (i, ii, iii, and iv):
     - **i.** Patient is ≥ 18 years of age; AND
     - **ii.** Patient has a relapsing form of multiple sclerosis; AND
       Note: Examples of relapsing forms of multiple sclerosis include clinically isolated syndrome, relapsing remitting disease, and active secondary progressive multiple sclerosis.
     - **iii.** Patient meets ONE of the following (a or b):
       - **a)** According to the prescriber, the patient has experienced inadequate efficacy or significant intolerance to one disease-modifying agent used for multiple sclerosis; OR
         Note: See Appendix A for examples.
       - **b)** According to the prescriber the patient has highly active or aggressive multiple sclerosis by meeting ONE of the following [(1), (2), (3), or (4)]:
         - **(1)** Patient has demonstrated rapidly advancing deterioration(s) in physical functioning **[documentation required]**; OR
           Note: Examples include loss of mobility or lower levels of ambulation and severe changes in strength or coordination.
         - **(2)** Disabling relapse(s) with suboptimal response to systemic corticosteroids **[documentation required]**; OR
         - **(3)** Magnetic resonance imaging (MRI) findings suggest highly active or aggressive multiple sclerosis **[documentation required]**; OR
           Note: Examples include new, enlarging, or a high burden of T2 lesions or gadolinium-enhancing lesions.
         - **(4)** Manifestations of multiple sclerosis-related cognitive impairment **[documentation required]**; AND
     - **iv.** The medication is prescribed by or in consultation with a neurologist or a physician who specializes in the treatment of multiple sclerosis; OR
   - **B)** Patient is Currently Receiving a Natalizumab Product. Approve if the patient meets ONE of the following (i or ii):
     - **i.** Patient has been receiving a natalizumab product for < 1 year. Approve if the patient meets ALL of the following (a, b, and c):
       - **a)** Patient is ≥ 18 years of age; AND
       - **b)** Patient has a relapsing form of multiple sclerosis; AND
         Note: Examples of relapsing forms of multiple sclerosis include clinically isolated syndrome, relapsing remitting disease, and active secondary progressive disease.
       - **c)** The medication is prescribed by or in consultation with a neurologist or a physician who specializes in the treatment of multiple sclerosis; OR

ii. Patient has been receiving a natalizumab product for 1 year or more. Approve if the patient meets ALL of the following (a, b, c, and d):
- **a)** Patient is ≥ 18 years of age; AND
- **b)** Patient has a relapsing form of multiple sclerosis; AND
  Note: Examples of relapsing forms of multiple sclerosis include clinically isolated syndrome, relapsing remitting disease, and active secondary progressive multiple sclerosis.
- **c)** Patient meets ONE of the following [(1) or (2)]:
  - **(1)** Patient experienced a beneficial clinical response when assessed by at least one objective measure; OR
    Note: Examples include stabilization or reduced worsening in disease activity as evaluated by magnetic resonance imaging (MRI) [absence or a decrease in gadolinium enhancing lesions, decrease in the number of new or enlarging T2 lesions]; stabilization or reduced worsening on the Expanded Disability Status Scale (EDSS) score; achievement in criteria for No Evidence of Disease Activity-3 (NEDA-3) or NEDA-4; improvement on the fatigue symptom and impact questionnaire-relapsing multiple sclerosis (FSIQ-RMS) scale; reduction or absence of relapses; improvement or maintenance on the six-minute walk test or 12-Item Multiple Sclerosis Walking Scale; improvement on the Multiple Sclerosis Functional Composite (MSFC) score; and/or attenuation of brain volume loss.
  - **(2)** Patient experienced stabilization, slowed progression, or improvement in at least one symptom such as motor function, fatigue, vision, bowel/bladder function, spasticity, walking/gait, or pain/numbness/tingling sensation; AND
- **d)** The medication is prescribed by or in consultation with a neurologist or a physician who specializes in the treatment of multiple sclerosis.

Dosing. Approve up to 300 mg given by intravenous infusion administered no more frequently than once every 4 weeks.

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2. Crohn's Disease. Approve for the duration noted below if the patient meets ONE of the following (A or B):

A) Initial Therapy. Approve for 6 months if the patient meets ALL of the following (i, ii, iii, and iv):
- **i.** Patient is ≥ 18 years of age; AND
- **ii.** Patient has moderately to severely active Crohn's disease; AND
- **iii.** Patient has tried at least two advanced therapies indicated for use in Crohn's disease; AND
  Note: Advanced therapies include biologics and a Janus kinase inhibitor indicated for Crohn's disease. Each biosimilar tried from the same chemical would only count as a trial of one product. Refer to Appendix B for examples of biologics and the Janus kinase inhibitor indicated for use in Crohn's disease.
- **iv.** The medication is prescribed by or in consultation with a gastroenterologist; OR

B) Patient is Currently Receiving a Natalizumab Product. Approve for 1 year if the patient meets ALL of the following (i, ii, iii, and iv):
- **i.** Patient has been established on therapy for at least 6 months; AND
  Note: A patient who has received < 6 months of therapy or who is restarting therapy is reviewed under criteria A (Initial Therapy).
- **ii.** Patient is ≥ 18 years of age; AND
- **iii.** Patient meets at least ONE of the following (a or b):
  - **a)** When assessed by at least one objective measure, patient experienced a beneficial clinical response from baseline (prior to initiating natalizumab); OR

Note: Examples of objective measures include fecal markers (e.g., renal lactoferrin, fecal calprotectin), serum markers (e.g., C-reactive protein), imaging studies (magnetic resonance enterography [MRE], computed tomography enterography [CTE]), endoscopic assessment, and/or reduced dose of corticosteroids.

b) Compared with baseline (prior to initiating natalizumab), patient experienced an improvement in at least one symptom, such as decreased pain, fatigue, stool frequency, and/or blood in stool; AND

iv. The medication is prescribed by or in consultation with a gastroenterologist.

Dosing in Crohn's Disease. Approve up to 300 mg given by intravenous infusion administered no more frequently than once every 4 weeks.

CONDITIONS NOT RECOMMENDED FOR APPROVAL

Coverage of natalizumab is not recommended in the following situations:

1. **Concurrent Use with Other Potent Immunosuppressants.** Co-administration with other potent immunosuppressive drugs has the risk of added immunosuppression and has not been evaluated in clinical trials.[1]
   Note: Examples include 6-mercaptopurine, azathioprine, cyclosporine, and methotrexate.

2. **Concurrent Use With a Biologic or with a Targeted Synthetic Oral Small Molecule Drug.** This medication should not be administered in combination with another biologic or with a targeted synthetic oral small molecule drug used for an inflammatory condition (see Appendix B for examples). Combination therapy is generally not recommended due to a potentially higher rate of adverse events and lack of controlled clinical data supporting additive efficacy.

3. **Concurrent Use with Other Disease-Modifying Agents Used for Multiple Sclerosis.** These agents are not indicated for use in combination (See Appendix A for examples). Additional data are required to determine if use of disease-modifying multiple sclerosis agents in combination is safe and provides added efficacy.

4. **Non-Relapsing Forms of Multiple Sclerosis.** The safety and efficacy of natalizumab have not been established in patients with primary progressive multiple sclerosis.
   Note: An example of a non-relapsing form of multiple sclerosis is primary progressive multiple sclerosis.

5. **Ulcerative Colitis.** Efficacy data with use of natalizumab are limited.[10]

6. Coverage is not recommended for circumstances not listed in the Recommended Authorization Criteria. Criteria will be updated as new published data are available.

REFERENCES

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2. Tyruko® intravenous infusion [prescribing information]. Princeton, NJ: Sandoz; August 2023.
3. A Consensus Paper by the Multiple Sclerosis Coalition. The use of disease-modifying therapies in multiple sclerosis. Updated September 2019.
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5. No authors listed. Drugs for multiple sclerosis. *Med Lett Drugs Ther*. 2021;63(1620):42-48.

6. Lublin FD, Reingold SC, Cohen JA, et al. Defining the clinical course of multiple sclerosis: the 2013 revisions. *Neurology*. 2014;83:278-286.
7. Thompson AJ, Banwell BL, Barkhof F, et al. Diagnosis of multiple sclerosis: 2017 revisions of the McDonald criteria. *Lancet Neurol*. 2018;17(2):162-173.
8. Dolinger M, Torres J, Vermeire S. Crohn's disease. *Lancet*. 2024;403(10432):1177-1191.
9. Lichtenstein GR, Loftus EV, Afzali A, et al. ACG clinical guideline: management of Crohn's Disease in Adults. *Am J Gastroenterol*. 2025;120:1225-1264.
10. Gordon FH, Hamilton MI, Donoghue S, et al. A pilot study of treatment of active ulcerative colitis with natalizumab, a humanized monoclonal antibody to alpha-4 integrin. *Aliment Pharmacol Ther*. 2002;16:699-705.

HISTORY

Type of Revision	Summary of Changes	Review Date
Annual Revision	**Crohn's Disease:** Regarding the requirement that the patient has tried at least two biologics for Crohn's disease, the listing of agents was updated as follows: Zymfentra was added and it was specified that the infliximab formulation was by intravenous infusion. **Conditions Not Recommended for Approval:** Regarding the Exclusion for Concurrent Use with an Immunosuppressant Agent in Patient with Crohn's Disease, the listing of agents was updated as follows: Zymfentra and Rinvoq were added, it was specified that the infliximab formulation was by intravenous infusion, and it was clarified that Entyvio was the intravenous infusion formulation.	11/15/2023
Selected Revision	**Crohn's Disease:** Moved examples of biologics from a Note to Appendix B. **Conditions Not Recommended for Approval:** Concurrent Use with Other Potent Immunosuppressants was changed to as listed (previously was listed as Potent Immunosuppressant Agent in a Patient with Crohn's disease). Added Concurrent use with a Biologic or with a Targeted Synthetic Oral Small Molecule Drug is not allowed.	09/11/2024
Annual Revision	**Multiple Sclerosis:** Ocrevus Zunovo was added to the Appendix as a disease-modifying agent used for multiple sclerosis.	10/09/2024
Early Annual Revision	The name of the policy was changed to add "Injectable – Other". In addition, the following changes were made: **Multiple Sclerosis:** Extavia was removed from Appendix A. **Crohn's Disease:** For Initial Therapy, criteria was changed from "the patient has tried at least two biologics indicated for use in Crohn's disease" to "the patient has tried at least two advanced therapies indicated for use in Crohn's disease". An addition was made to the note that "advanced therapies include biologics and a Janus kinase inhibitor indicated for Crohn's disease. It was added that Appendix B now lists the Janus kinase inhibitor indicated for use in Crohn's disease. Appendix B was updated to note that biosimilars are available for IV and SC Stelara. New indications in Appendix B were updated.	07/23/2025
Selected Revision	The Policy name was changed from "Multiple Sclerosis and Crohn's Disease (Injectable – Other) – Tysabri" to "Multiple Sclerosis and Crohn's Disease (Injectable – Other) – Natalizumab Products". Tyruko (natalizumab-sztn intravenous infusion) was added to the policy with the same criteria applied as those for Tysabri. Throughout criteria, reference to Tysabri was changed to natalizumab or natalizumab product(s). There were no other changes to the criteria.	09/24/2025

APPENDIX A

Medication	Mode of Administration
Aubagio® (teriflunomide tablets, generic)	Oral
Avonex® (interferon beta-1a intramuscular injection)	Injection (self-administered)
Bafiertam® (monomethyl fumarate delayed-release capsules)	Oral
Betaseron® (interferon beta-1b subcutaneous injection)	Injection (self-administered)
Briumvi® (ublituximab-xiiy intravenous infusion)	Intravenous infusion
Copaxone® (glatiramer acetate subcutaneous injection, generic)	Injection (self-administered)
Gilenya® (fingolimod capsules, generic)	Oral
Glatopa® (glatiramer acetate subcutaneous injection)	Injection (self-administered)
Kesimpta® (ofatumumab subcutaneous injection)	Injection (self-administered)
Lemtrada® (alemtuzumab intravenous infusion)	Intravenous infusion
Mavenclad® (cladribine tablets)	Oral
Mayzent® (siponimod tablets)	Oral
Natalizumab Intravenous Products (Tysabri, biosimilar)	Intravenous infusion
Ocrevus® (ocrelizumab intravenous infusion)	Intravenous infusion
Ocrevus Zunovo™ (ocrelizumab and hyaluronidase-ocsq subcutaneous injection)	Subcutaneous Injection (not self-administered)
Plegridy® (peginterferon beta-1a subcutaneous or intramuscular injection)	Injection (self-administered)
Ponvory® (ponesimod tablets)	Oral
Rebif® (interferon beta-1a subcutaneous injection)	Injection (self-administered)
Tascenso ODT® (fingolimod orally disintegrating tablets)	Oral
Tecfidera® (dimethyl fumarate delayed-release capsules, generic)	Oral
Vumerity® (diroximel fumarate delayed-release capsules)	Oral
Zeposia® (ozanimod capsules)	Oral

APPENDIX B

	Mechanism of Action	Examples of Indications*
Biologics		
Adalimumab SC Products (Humira®, biosimilars)	Inhibition of TNF	AS, CD, HS, JIA, PsO, PsA, RA, UC
Cimzia® (certolizumab pegol SC injection)	Inhibition of TNF	AS, CD, JIA, nr-axSpA, PsO, PsA, RA
Etanercept SC Products (Enbrel®, biosimilars)	Inhibition of TNF	AS, JIA, PsO, PsA, RA
Infliximab IV Products (Remicade®, biosimilars)	Inhibition of TNF	AS, CD, PsO, PsA, RA, UC
Zymfentra® (infliximab-dyyb SC injection)	Inhibition of TNF	CD, UC
Simponi®, Simponi Aria® (golimumab SC injection, golimumab IV infusion)	Inhibition of TNF	SC formulation: AS, PsA, RA, UC
		IV formulation: AS, PJIA, PsA, RA
Tocilizumab Products (Actemra® IV, biosimilar; Actemra SC, biosimilar)	Inhibition of IL-6	SC formulation: PJIA, RA, SJIA
		IV formulation: PJIA, RA, SJIA
Kevzara® (sarilumab SC injection)	Inhibition of IL-6	RA
Orencia® (abatacept IV infusion, abatacept SC injection)	T-cell costimulation modulator	SC formulation: JIA, PSA, RA
		IV formulation: JIA, PsA, RA
Rituximab IV Products (Rituxan®, biosimilars)	CD20-directed cytolytic antibody	RA
Kineret® (anakinra SC injection)	Inhibition of IL-1	JIA^, RA
Omvoh® (mirikizumab IV infusion, SC injection)	Inhibition of IL-23	CD, UC
Ustekinumab Products (Stelara® IV , biosimilar; Stelara SC, biosimilar)	Inhibition of IL-12/23	SC formulation: CD, PsO, PsA, UC
		IV formulation: CD, UC
Siliq® (brodalumab SC injection)	Inhibition of IL-17	PsO
Cosentyx® (secukinumab SC injection; secukinumab IV infusion)	Inhibition of IL-17A	SC formulation: AS, ERA, nr-axSpA, PsO, PsA
		IV formulation: AS, nr-axSpA, PsA
Taltz® (ixekizumab SC injection)	Inhibition of IL-17A	AS, nr-axSpA, PsO, PsA
Bimzelx® (bimekizumab-bkzx SC injection)	Inhibition of IL-17A/17F	AS, HS, nr-axSpA, PsA, PsO
Ilumya® (tildrakizumab-asmn SC injection)	Inhibition of IL-23	PsO
Skyrizi® (risankizumab-rzaa SC injection, risankizumab-rzaa IV infusion)	Inhibition of IL-23	SC formulation: CD, PSA, PsO, UC
		IV formulation: CD, UC
Tremfya® (guselkumab SC injection, guselkumab IV infusion)	Inhibition of IL-23	SC formulation: CD, PsA, PsO, UC
		IV formulation: CD, UC
Entyvio® (vedolizumab IV infusion, vedolizumab SC injection)	Integrin receptor antagonist	CD, UC
Oral Therapies/Targeted Synthetic Oral Small Molecule Drugs		
Otezla® (apremilast tablets)	Inhibition of PDE4	PsO, PsA
Cibinqo™ (abrocitinib tablets)	Inhibition of JAK pathways	AD
Olumiant® (baricitinib tablets)	Inhibition of JAK pathways	RA, AA
Litfulo® (ritlecitinib capsules)	Inhibition of JAK pathways	AA
Leqselvi® (deuruxolitinib tablets)	Inhibition of JAK pathways	AA
Rinvoq® (upadacitinib extended-release tablets)	Inhibition of JAK pathways	AD, AS, nr-axSpA, RA, PsA, CD, UC
Rinvoq® LQ (upadacitinib oral solution)	Inhibition of JAK pathways	PsA, PJIA
Sotyktu® (deucravacitinib tablets)	Inhibition of TYK2	PsO
Xeljanz® (tofacitinib tablets/oral solution)	Inhibition of JAK pathways	RA, PJIA, PsA, UC
Xeljanz® XR (tofacitinib extended-release tablets)	Inhibition of JAK pathways	RA, PsA, UC
Zeposia® (ozanimod tablets)	Sphingosine 1 phosphate receptor modulator	UC
Velsipity® (etrasimod tablets)	Sphingosine 1 phosphate receptor modulator	UC

* Not an all-inclusive list of indications. Refer to the prescribing information for the respective agent for FDA-approved indications; SC – Subcutaneous; TNF – Tumor necrosis factor; AS – Ankylosing spondylitis; CD – Crohn's disease; HS – Hidradenitis suppurativa; JIA – Juvenile idiopathic arthritis; PsO – Plaque psoriasis; PsA – Psoriatic arthritis; RA – Rheumatoid arthritis; UC – Ulcerative colitis; nr-axSpA – Non-radiographic axial spondyloarthritis; IV – Intravenous, PJIA – Polyarticular juvenile idiopathic arthritis; IL – Interleukin; SJIA – Systemic juvenile idiopathic arthritis; ^ Off-label use of Kineret in JIA supported in guidelines; ERA – Enthesitis-related arthritis; DMARD – Disease-modifying antirheumatic drug; PDE4 – Phosphodiesterase 4; JAK – Janus kinase; AD – Atopic dermatitis; AA – Alopecia areata; TYK2 – Tyrosine kinase 2.