



HELP TAKE THE FIRE OUT OF AUTOINFLAMMATORY DISEASE

ILARIS is indicated for 8 autoinflammatory diseases across Still's disease, PFS, and gout flares

Still's disease: SJIA and AOSD
 PFS: FMF, HIDS/MKD, TRAPS, CAPS (FCAS and MWS)

AOSD, adult-onset Still's disease; CAPS, cryopyrin-associated periodic syndromes; FCAS, familial cold autoinflammatory syndrome; FMF, familial Mediterranean fever; HIDS, hyperimmunoglobulin D syndrome; MKD, mevalonate kinase deficiency; MWS, Muckle-Wells syndrome; PFS, periodic fever syndromes; SJIA, systemic juvenile idiopathic arthritis; TRAPS, tumor necrosis factor receptor–associated periodic syndrome.

INDICATIONS

ILARIS[®] (canakinumab) is an interleukin-1 β blocker indicated for the treatment of the following autoinflammatory Periodic Fever Syndromes:

- Cryopyrin-Associated Periodic Syndromes (CAPS), in adults and pediatric patients 4 years of age and older, including:
 Envilued Coded Autoinflorement on Sun durants (ECAS)
 - Familial Cold Autoinflammatory Syndrome (FCAS)
 - Muckle-Wells Syndrome (MWS)
- Tumor Necrosis Factor Receptor Associated Periodic Syndrome (TRAPS) in adult and pediatric patients
- Hyperimmunoglobulin D Syndrome (HIDS)/Mevalonate Kinase Deficiency (MKD) in adult and pediatric patients
- Familial Mediterranean Fever (FMF) in adult and pediatric patients

ILARIS is indicated for the treatment of active Still's disease, including Adult-Onset Still's Disease (AOSD) and Systemic Juvenile Idiopathic Arthritis (SJIA) in patients 2 years of age and older.

ILARIS is indicated for the symptomatic treatment of adult patients with gout flares in whom nonsteroidal anti-inflammatory drugs (NSAIDs) and colchicine are contraindicated, are not tolerated, or do not provide an adequate response, and in whom repeated courses of corticosteroids are not appropriate.

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

ILARIS is contraindicated in patients with confirmed hypersensitivity to canakinumab or to any of the excipients.



Periodic fever syndromes are characterized by^{1,2}**:**

• Fever with temperatures peaking >39 °C (>102.2 °F)

Rash in varying forms

- Systemic inflammation often with arthralgia/arthritis
 - Elevated inflammatory markers

Predominant ethnic distributionTurkish, Armenian, Arab, Jewish, ItalWorldwide prevalence or number of cases1 to 5 in 10,000Typical age at onset<20 years
or number of casesT to 5 in 10,000Typical age at onset<20 years
Duration of attacks12 hours to 3 daysFrequency of attacksIrregular; once per week to once every 5 to 10 yearsGene mutationMEFV
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Frequency of attacksonce every 5 to 10 yearsGene mutationMEFV
Inheritance Autosomal recessive
 Cutaneous findings Erysipelas-like erythema Characterized by red, warm, and swollen areas Lesions are tender to the touch, ca be 10 cm to 15 cm in diameter, an usually occur below the knee on the anterior leg or top of foot
Other select clinical features • Abdominal pain • Chest pain • Arthritis/monoarthritis
High serology Increase in CRP, ESR, and SAA

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

Serious Infections

ILARIS has been associated with an increased risk of serious infections. Exercise caution when administering ILARIS to patients with infections, a history of recurring infections or underlying conditions, which may predispose them to infections.

HIDS/MKD ^{1-4,8,9}
Dutch or Northern European
>180
<1 year
3 to 7 days
Irregular; 2- to 8-week intervals
MVK
Autosomal recessive
 Diffuse maculopapular eruption extending to the palms and soles, or nodular, urticarial, or morbilliform Erythematous macules that are sometimes painful can occur
Abdominal painAphthous ulcersLymphadenopathy
Increase in CRP, ESR, IgD, and SAA
images credits: Reproduced with permission from Emoded com (EME) Reprinted from Textback

Rash images credits: Reproduced with permission from Emedmd.com (FMF). Reprinted from *Textbook of Pediatric Rheumatology*, 7th ed, Petty RE et al., Periodic Fever Syndromes and Other Inherited Autoinflammatory Diseases, page 617, 2016, with permission from Elsevier (HIDS/MKD). CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; IgD, immunoglobulin D;

CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; IgD, immunoglobulin SAA, serum amyloid A.



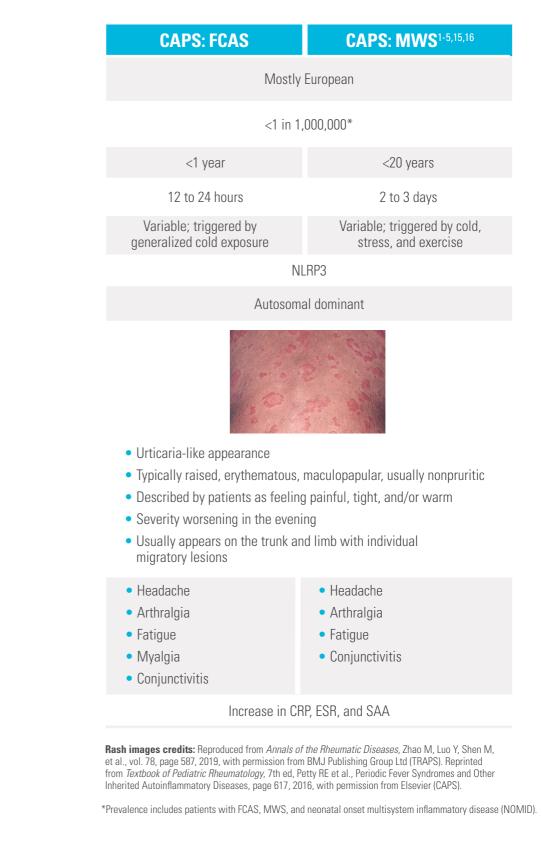
PFS can be difficult to diagnose due to overlapping disease presentations

	TRAPS ^{1-4,10-14}		
Predominant ethnic distribution	All ethnicities		
Worldwide prevalence or number of cases	>1000		
Typical age at onset	Varies; <3 years to <20 years		
Duration of attacks	7 to 28 days; nearly continuous in one-third of patients		
Frequency of attacks	Irregular; 5 weeks to months or years		
Gene mutation	TNFRSF1A		
Inheritance	Autosomal dominant		
Cutaneous findings	 Erythematous, migratory patch Often overlies an area of myalgia and migrates together in a centrifugal pattern Often found on the torso or extremity 		
Other select clinical features	 Abdominal pain Musculoskeletal pain Eye manifestations, such as periorbital edema 		
High serology	Increase in CRP, ESR, and SAA		

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

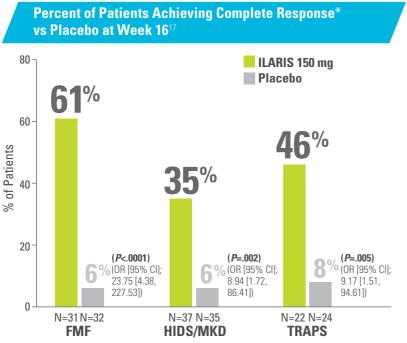
Serious Infections (cont)

Avoid administering ILARIS to patients during an active infection requiring medical intervention. Discontinue ILARIS if a patient develops a serious infection.





Rapid resolution of index flare at Day 15 with no new flares through Week 16 was achieved by significantly more patients receiving ILARIS¹⁷



• At Day 15, the majority of patients with FMF (81%, n/N, 25/31), HIDS/MKD (65%, n/N, 24/37), and TRAPS (64%, n/N, 14/22) who received ILARIS achieved resolution of index disease flare vs placebo: FMF (31%, n/N, 10/32), HIDS/MKD (37%, n/N, 13/35), and TRAPS (21%, n/N, 5/24)

FMF, TRAPS, and HIDS/MKD Study Design¹⁷

The efficacy of ILARIS was assessed in patients with PFS across 3 disease cohorts: FMF, HIDS/ MKD, and TRAPS. In the 16-week, double-blind, placebo-controlled treatment period, patients were randomized to receive ILARIS 150 mg (2 mg/kg for a body weight \leq 40 kg) or placebo every 4 weeks for 16 weeks and were allowed uptitration to ILARIS 300 mg (or 4 mg/kg) every 4 weeks for patients whose disease flare did not resolve or who had persistent disease, or active treatment.

The primary endpoint was the proportion of complete responders within each cohort as defined by patients who had resolution of their index disease flare at Day 15 and did not experience a new disease flare during the remainder of the 16-week treatment period.

* Complete response defined as resolution of index flare (PGA <2 and CRP <10 mg/L or a \geq 70% reduction from baseline) at Day 15 and no new flare (PGA \geq 2 and CRP \geq 30 mg/L) throughout the 16-week treatment period.

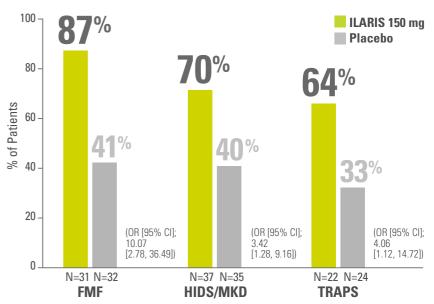
A 5-point PGA scale was used by physicians to assess overall disease severity, where 0, no disease-associated signs and symptoms, 1, minimal, 2, mild, 3, moderate, and 4, severe. The key signs and symptoms assessed in the PGA for each condition were the following: FMF: abdominal pain, skin rash, chest pain, arthralgia/arthritis; HIDS/MKD: abdominal pain, lymphadenopathy, aphthous ulcers; TRAPS: abdominal pain, skin rash, musculoskeletal pain, eve manifestations.

PGA, Physician's Global Assessment

In the same study,

After the initial dose at Day 15, ILARIS improved disease activity as measured by PGA^{17,18}

Percent of Patients Showing No or Minimal Signs of Disease Activity (PGA score <2) vs Placebo at Day 15¹¹



PGA Scores at Baseline¹⁸:

- 10% of patients with FMF in the ILARIS group had mild disease vs 19% in the placebo group
- In the ILARIS group, 55% had moderate disease and 36% had severe disease compared with 59% and 22%, respectively, in the placebo group
- 27% of patients with HIDS/MKD had mild disease vs 20% in the placebo group
 - In the ILARIS group, 60% had moderate disease and 14% had severe disease compared with 60% and 20%, respectively, in the placebo group
- 41% of patients with TRAPS had mild disease vs 46% in the placebo group - In the ILARIS group, 50% had moderate disease and 9% had severe disease compared with 46% and 8%, respectively, in the placebo group

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

Serious Infections (cont)

Infections, predominantly of the upper respiratory tract, in some instances serious, have been reported with ILARIS. Generally, the observed infections responded to standard therapy. Isolated cases of unusual or opportunistic infections (eg, aspergillosis, atypical mycobacterial infections, cytomegalovirus, herpes zoster) were reported during ILARIS treatment. A causal relationship of ILARIS to these events cannot be excluded. In clinical trials, ILARIS has not been administered concomitantly with tumor necrosis factor (TNF) inhibitors. An increased incidence of serious infections has been associated with administration of another interleukin-1 (IL-1) blocker in combination with TNF inhibitors. Coadministration of ILARIS with TNF inhibitors is not recommended because this may increase the risk of serious infections.

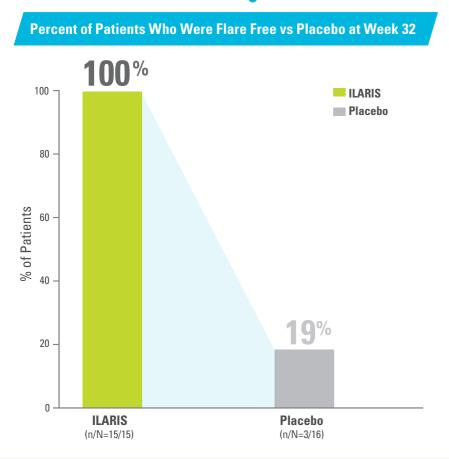
Please see additional Important Safety Information throughout and full Prescribing Information, including Medication Guide, for ILARIS.



FMF, HIDS/MKD, AND TRAPS EFFICACY

In Part 2,

After 3 doses* of ILARIS, 100% of patients remained flare free through 24 weeks^{17,19†}



CAPS Study Design^{17,19}

A 3-part study in patients with CAPS (MWS) treated with a subcutaneous dose of ILARIS 150 mg (in patients weighing >40 kg) or ILARIS 2 mg/kg (in patients weighing \geq 15 kg and \leq 40 kg) every 8 weeks.

- **PART 1** An 8-week open-label treatment period in which 35 patients were treated with a single injection of ILARIS 150 mg.
- PART 2 A double-blind, randomized withdrawal phase in which patients who achieved a complete clinical response and did not relapse by Week 8 in Part 1 were randomized to ILARIS 150 mg or 2 mg/kg in patients weighing ≥15 kg and ≤40 kg (n=15) or placebo (n=16) every 8 weeks for 24 weeks. During Part 2, patients continued with blinded treatment unless a relapse occurred to prompt early entry into Part 3.
- PART 3 An open-label treatment period in which patients received ILARIS 150 mg (n=31) every 8 weeks. Patients entered Part 3 at the end of Part 2 or at the time of relapse, whichever occurred first. For patients who completed Part 2 without disease flare, Part 3 had a duration of 16 weeks. For patients who had disease relapse in Part 2, Part 3 had a duration of up to 40 weeks. The total study duration was 48 weeks.

The primary endpoint was the proportion of patients experiencing relapse in Part 2. $^{\scriptscriptstyle \pm}$

In Part 1, The majority of patients achieved complete clinical response at Weeks 1 and 8 after the first dose of ILARIS^{17,19}



Complete clinical response was defined as meeting all of the following criteria^{17,19}:

- Physician's assessment of disease activity ≤ minimal (rated on a 5-point scale consisting of absent, minimal, mild, moderate, and severe)
- Assessment of skin disease ≤ minimal (rated on a 5-point scale consisting of absent, minimal, mild, moderate, and severe)
- Normal serum values of CRP and SAA (<10 mg/L)

Assessment of disease activity included a composite of the following symptoms: urticarial skin rash, headache/migraine, fatigue/malaise, conjunctivitis, arthralgia, myalgia, and other symptoms related or unrelated to CAPS.

*For patients with CAPS, ILARIS is dosed once every 8 weeks.¹⁷

¹Ten patients in the placebo group met the criteria for clinical relapse, and 3 patients discontinued Part 2 due to unsatisfactory therapeutic effect.²⁰

*Disease relapse: Defined as CRP and/or SAA value >30 mg/L and either a score of mild or worse for physician's assessment of disease activity, or a score of minimal or worse for physician's assessment of disease activity and assessment of skin disease.¹⁷

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

Serious Infections (cont)

Drugs that affect the immune system by blocking TNF have been associated with an increased risk of new tuberculosis (TB) and reactivation of latent TB. It is possible that use of IL-1 inhibitors, such as ILARIS, increases the risk of reactivation of TB or of opportunistic infections.

Prior to initiating immunomodulatory therapies, including ILARIS, evaluate patients for active and latent TB infection. Appropriate screening tests should be performed in all patients. ILARIS has not been studied in patients with a positive TB screen, and the safety of ILARIS in individuals with latent TB infection is unknown. Treat patients testing positive in TB screening according to standard medical practice prior to therapy with ILARIS. Instruct patients to seek medical advice if signs, symptoms, or high risk exposure suggestive of TB (eg, persistent cough, weight loss, subfebrile temperature) appear during or after ILARIS therapy. Healthcare providers should follow current CDC guidelines both to evaluate for and to treat possible latent TB infections before initiating therapy with ILARIS.



Safety profile of ILARIS from FMF, HIDS/MKD, and TRAPS clinical trials¹⁷

- In Part 2, 90 patients were initially randomized to ILARIS 150 mg and 91 patients were randomized to placebo every 4 weeks
 - ILARIS group: 55.6% of patients remained on the initial dose through Week 16, with 6.7% receiving an additional ILARIS dose between Day 7 and Day 15
 - Placebo group: 9.9% of patients remained on placebo through Week 16, with 28.6% switching to ILARIS treatment by Day 15
- Overall, there were 58 patients with FMF, 68 patients with HIDS/MKD, and 43 patients with TRAPS in the safety set with a cumulative exposure of 47.61 patient-years. The cumulative exposure in the placebo group was 8.03 patient-years

Most Common Adverse Drug Reactions (≥3%) in Patients Treated With ILARIS		
Adverse reactions by preferred term in \ge 3% of patients with FMF, HIDS/MKD, and TRAPS	ILARIS %	
Injection site reactions	10.1	
Nasopharyngitis	10.7	
Upper respiratory tract infection	7.1	
Rhinitis	5.3	
Gastroenteritis	3.0	
Pharyngitis	3.0	

- The most common adverse reactions (≥10%) were injection site reactions and nasopharyngitis
- Serious infections (eg, conjunctivitis, pneumonia, pharyngitis, pharyngotonsillitis) were observed in approximately 2.4% (0.03 per 100 patient-days) of patients receiving ILARIS

No new or unexpected safety findings of ILARIS emerged in the PFS clinical trial^{17,18}

Among all 3 patient cohorts in the ILARIS group:

- No deaths were reported
- No anti-ILARIS antibodies were detected in any patient
- No patients with FMF, 2 patients with HIDS/MKD, and 1 patient with TRAPS discontinued treatment due to AEs

AE, adverse event.

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

Immunosuppression

The impact of treatment with anti-IL-1 therapy on the development of malignancies is not known. However, treatment with immunosuppressants, including ILARIS, may result in an increase in the risk of malignancies.

Hypersensitivity

Hypersensitivity reactions have been reported with ILARIS therapy. During clinical trials, no anaphylactic reactions attributable to treatment with canakinumab have been reported. It should be recognized that symptoms of the underlying disease being treated may be similar to symptoms of hypersensitivity. If a severe hypersensitivity reaction occurs, administration of ILARIS should be discontinued and appropriate therapy initiated.

Immunizations

Avoid administration of live vaccines concurrently with ILARIS. Update all recommended vaccinations prior to initiation of therapy with ILARIS. In addition, because ILARIS may interfere with normal immune response to new antigens, vaccinations may not be effective in patients receiving ILARIS.

Canakinumab, like other monoclonal antibodies, is actively transported across the placenta mainly during the third trimester of pregnancy and may cause immunosuppression in the *in utero* exposed infant. The risks and benefits should be considered prior to administering live vaccines to infants who were exposed to ILARIS *in utero* for at least 4 to 12 months following the mother's last dose of ILARIS.



Safety profile of ILARIS from CAPS clinical trials¹⁷

AEs by Preferred Term Occurring in ≥10% of Patients Throughout Entire Study				
Preferred term	ILARIS (N=35), n (%)			
Number of patients with AEs	35 (100)			
Nasopharyngitis	12 (34)			
Diarrhea	7 (20)			
Influenza	6 (17)			
Rhinitis	6 (17)			
Nausea	5 (14)			
Headache	5 (14)			
Bronchitis	4 (11)			
Gastroenteritis	4 (11)			
Pharyngitis	4 (11)			
Weight increased	4 (11)			
Musculoskeletal pain	4 (11)			
Vertigo	4 (11)			

- A total of 9 serious adverse reactions were reported with ILARIS in CAPS clinical trials, including infections and vertigo*
 - 1 patient discontinued treatment due to potential infection
- 9% of patients experienced injection site reactions in Part 1
 - Injection site reactions occurred in 1 patient in each arm (7%) of Part 2 and in 1 patient in Part 3
 - No severe injection site reactions were reported
- Infections, predominantly of the upper respiratory tract, in some instances serious, were reported with ILARIS
 - Generally, the observed infections responded to standard therapy
 - Isolated cases of unusual or opportunistic infections (eg, aspergillosis, atypical mycobacterial infections, cytomegalovirus, herpes zoster) were reported during ILARIS treatment. A causal relationship of ILARIS to these events cannot be excluded

*These data reflect exposure to ILARIS in 104 adult and pediatric patients with CAPS in placebocontrolled (35 patients) and uncontrolled trials. Sixty-two patients were exposed to ILARIS for at least 6 months, 56 for at least 1 year, and 4 for at least 3 years.¹⁷

ILARIS is dosed once monthly or once every 2 months in PFS¹⁷



ILARIS Is Given Subcutaneously by a Health Care Professional and Is Dosed According to Body Weight in the Following Indications

Body Weight	Recommended Dose	Recommended Titration		
PFS: FMF, HIDS/MKD, and TRAPS				
≤40 kg	2 mg/kg every 4 weeks	Dose can be increased to 4 mg/kg every 4 weeks [†]		
>40 kg	150 mg every 4 weeks	Dose can be increased to 300 mg every 4 weeks ⁺		
PFS: CAPS (FCAS AND MWS)				
≥15 kg to ≤40 kg	2 mg/kg every 8 weeks	For pediatric patients, dose can be increased to 3 mg/kg every 8 weeks [†]		
>40 kg	150 mg every 8 weeks	_		

[†]If clinical response is inadequate.

Refer to the full Prescribing Information for Dosage and Administration.

IMPORTANT SAFETY INFORMATION (cont) WARNINGS AND PRECAUTIONS

Macrophage Activation Syndrome

including Medication Guide, for ILARIS.

Macrophage Activation Syndrome (MAS) is a known, life-threatening disorder that may develop in patients with rheumatic conditions, in particular Still's disease, and should be aggressively treated. Physicians should be attentive to symptoms of infection or worsening of Still's disease as these are known triggers for MAS. Eleven cases of MAS were observed in 201 SJIA patients treated with canakinumab in clinical trials. Based on the clinical trial experience, ILARIS does not appear to increase the incidence of MAS in Still's disease patients, but no definitive conclusion can be made.

Please see additional Important Safety Information throughout and full Prescribing Information,



Dedicated and dependable support with ILARIS Companion



A Wide Range of Services and Support



ILARIS START FORM

Physician submits form to initiate treatment and patient support services.



BENEFITS INVESTIGATION*

Verifies health care plan benefits and provides reimbursement policies for ILARIS.



COVERAGE REVIEW AND SUPPORT

Identifies financial support programs for uninsured and underinsured patients.



PRIOR AUTHORIZATION (PA) SUPPORT⁺

Assists in identifying plan-specific PA criteria, if required.



APPEALS SUPPORT[†]

Provides support with insurance appeals.

CO-PAY SAVINGS OFFER[‡]

Designed to make ILARIS more affordable for commercially insured patients.

- Eligible patients pay no more than \$30 per month, subject to annual cap
- Patients who are insured through federal or state programs are not eligible

FIRST DOSE PROGRAM[‡]

- If a payer approval decision is delayed, physicians will be contacted to discuss program enrollment for the patient
- Ships the initial dose of ILARIS to eligible patients free of charge if a payer approval is not received within 2 weeks



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SPECIALTY PHARMACY OUTREACH

Works with a patient's specialty pharmacy on patient follow-up.

PRODUCT DELIVERY SUPPORT



Works with a health care plan's preferred specialty pharmacy to support coordination and delivery of ILARIS to the patient's home or physician's office.

HOME HEALTH NURSE SERVICE

Patients can have their injections administered in their homes or at a location other than the physician's office.

- Available in all 50 US states and Puerto Rico
- Requesting physician will receive a visit confirmation

Increased access can help elevate patient care²¹





If you have questions about services, contact a program representative Monday to Friday, 9 AM to 6 PM ET.

HIGH PA APPROVAL RATE

≈90% OF PA REQUESTS ARE APPROVED

ILARIS SHIPMENT TIME



Program services are available after the clinical decision to prescribe ILARIS has been made.

*Allows patients to learn about the coverage and cost of ILARIS.

- [†]Information provided in support of a PA must be based on the physician's clinical judgment and forms must be completed by the physician/office staff.
- [‡]Limitations apply. See Program Terms and Conditions on the ILARIS Start Form available at <u>www.ilarishcp.com/access</u>.

This offer is not valid under Medicare, Medicaid, or any other federal or state program. Novartis reserves the right to rescind, revoke, or amend this program without notice.

IMPORTANT SAFETY INFORMATION (cont)

ADVERSE REACTIONS

Serious adverse reactions reported with ILARIS in the CAPS clinical trials included infections and vertigo. The most common adverse reactions greater than 10% associated with ILARIS treatment in CAPS patients were nasopharyngitis, diarrhea, influenza, rhinitis, headache, nausea, bronchitis, gastroenteritis, pharyngitis, weight increased, musculoskeletal pain, and vertigo.

The most common adverse reactions greater than or equal to 10% reported by patients with TRAPS, HIDS/MKD, and FMF treated with ILARIS were injection site reactions and nasopharyngitis.

The most common adverse drug reactions greater than 10% associated with ILARIS treatment in SJIA patients were infections (nasopharyngitis and upper respiratory tract infections), abdominal pain, and injection site reactions.

The most common adverse reactions greater than 2% reported by adult patients with gout flares treated with ILARIS in clinical trials were nasopharyngitis, upper respiratory tract infections, urinary tract infections, hypertriglyceridemia, and back pain.



HELP TAKE THE FIRE OUT OF AUTOINFLAMMATORY DISEASE

Learn more about ILARIS and the wide range of services and support available through ILARIS Companion. Visit <u>www.ILARISHCP.com</u>

IMPORTANT SAFETY INFORMATION CONTRAINDICATIONS

ILARIS is contraindicated in patients with confirmed hypersensitivity to canakinumab or to any of the excipients.

WARNINGS AND PRECAUTIONS

Serious Infections

ILARIS has been associated with an increased risk of serious infections. Exercise caution when administering ILARIS to patients with infections, a history of recurring infections or underlying conditions, which may predispose them to infections. Avoid administering ILARIS to patients during an active infection requiring medical intervention. Discontinue ILARIS if a patient develops a serious infection.

Please see additional Important Safety Information throughout and <u>full Prescribing</u> <u>Information, including Medication Guide, for ILARIS</u>.

References: 1. Hoffman HM, Simon A. Recurrent febrile syndromes — what a rheumatologist needs to know. Nat Rev Rheumatol. 2009;5(5):249-256. doi:10.1038/nrrheum.2009.40 2. Barron KS, Kastner DL. Periodic fever syndromes and other inherited autoinflammatory diseases. In: Petty RE, Laxer RM, Lindsley CB, Wedderburn LR, eds. Textbook of Pediatric Rheumatology. 7th ed. Elsevier; 2016:609-626. 3. Jesus AA, Oliveira JB, Hilário MO. et al. Pediatric hereditary autoinflammatory syndromes. J Pediatr (Rio J). 2010;86(5):353-366. doi:10.2223/ JPED.2015 4. Kastner DL. Hereditary periodic fever syndromes. Hematology Am Soc Hematol Educ Program. 2005(1):74-81. doi:10.1182/asheducation-2005.1.74 5. Ciccarelli F, De Martinis M, Ginaldi L. An update on autoinflammatory diseases. Curr Med Chem. 2014;21(3):261-269. doi:10.2174/09298673113206660303 6. Zadeh N, Getzug T, Grody WW. Diagnosis and management of familial Mediterranean fever: integrating medical genetics in a dedicated interdisciplinary clinic. Genet Med. 2011;13(3):263-269. doi:10.1097/GIM.0b013e31820e27b1 7. Samuels J, Aksentijevich I, Torosyan Y, et al. Familial Mediterranean fever at the millennium clinical spectrum, ancient mutations, and a survey of 100 American referrals to the National Institutes of Health. Medicine (Baltimore). 1998;77(4):268-297. doi:10.1097/00005792-199807000-00005 8. Haas D, Hoffmann GF. Mevalonate kinase deficiencies: from mevalonic aciduria to hyperimmunoglobulinemia D syndrome. Orphanet J Rare Dis. 2006;1:13. doi:10.1186/1750-1172-1-13 9. van der Burgh R, ter Haar NM, Boes ML, Frenkel J. Mevalonate kinase deficiency, a metabolic autoinflammatory disease. *Clin Immunol*. 2013;147(3):197-206. doi:10.1016/j. clim.2012.09.011 **10.** Genetics Home Reference. *Tumor necrosis factor receptor-associated periodic syndrome*. US National Library of Medicine; 2020. Accessed March 10, 2020. http://ghr.nlm.nih.gov/condition/tumornecrosis-factor-receptor-associated-periodic-syndrome 11. Hausmann JS, Dedeoglu F. Autoinflammatory diseases in pediatrics. Dermatol Clin. 2013;31(3):481-494. doi:10.1016/j.det.2013.04.003 12. Lachmann HJ, Hawkins PN. Developments in the scientific and clinical understanding of autoinflammatory disorders. Arthritis Res Ther. 2009;11(1):212. doi:10.1186/ar2579 13. Kimberley FC, Lobito AA, Siegel RM, Screaton GR. Falling into TRAPS receptor misfolding in the TNF receptor 1-associated periodic fever syndrome. Arthritis Res Ther. 2007;9(4):217. doi:10.1186/ar2197 14. Hull KM, Drewe E, Aksentijevich I, et al. The TNF receptor-associated periodic syndrome (TRAPS): emerging concepts of an autoinflammatory disorder. Medicine (Baltimore). 2002;81(5):349-368 doi:10.1097/00005792-200209000-00002 15. Hoffman HM. Hereditary immunologic disorders caused by pyrin and cryopyrin. Curr Allergy Asthma Rep. 2007;7(5):323-330. doi:10.1007/s11882-007-0049-4 16. Yu JR, Leslie KS. Cryopyrin-associated periodic syndrome: an update on diagnosis and treatment response. Curr Allergy Asthma Rep. 2011;11(1):12-20. doi:10.1007/s11882-010-1060-9 17. Ilaris. Prescribing information. Novartis Pharmaceuticals Corp. 18. Data on file. CACZ885N2301 FMF, HIDS/MKD, and TRAPS Clinical Study Report. Novartis Pharmaceuticals Corp; 2016. 19. Lachmann HJ, Kone-Paut I, Kuemmerle-Deschner JB, et al; Canakinumab in CAPS Study Group. Use of canakinumab in the cryopyrin-associated periodic syndrome. N Engl J Med. 2009;360(23):2416-2425. doi:10.1056/NEJMoa0810787 20. Data on file. CACZ885D2304 CAPS Clinical Study Report. East Hanover, NJ: Novartis Pharmaceuticals Corp; 2009. 21. Data on file. ILARIS Companion CRM Statistics Updates 2023. Novartis Pharmaceuticals Corp; 2023.





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