# Canakinumab: Drug information



(For additional information see "Canakinumab: Patient drug information" and see "Canakinumab: Pediatric drug information")

For abbreviations and symbols that may be used in Lexicomp ( show table)

## Special Alerts

### Canakinumab: COVID-19 October 2021

Most recent update(s): The National Institute of Health's COVID-19 guidelines recommend against the use of canakinumab for the treatment of COVID-19, except in the setting of a clinical trial. As part of our response to the evolving COVID-19 pandemic, published literature and guidelines from major health organizations are continuously monitored for potential content updates. At this time, only investigational medications with data determined to be of relatively high quality and/or consistently showing positive clinical outcomes to support dosing recommendations will be included in the Lexicomp monograph, outside of this Special Alert field.

Further information may be found at:

NIH COVID-19 Treatment Guidelines: https://www.covid19treatmentguidelines.nih.gov/

IDSA COVID-19 Treatment Guidelines: https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/

Clinicaltrials.gov: https://clinicaltrials.gov/ct2/results?cond=COVID-19&term=canakinumab&cntry=&state=&city=&dist=

## Brand Names: US

Ilaris

## Brand Names: Canada

Ilaris

## Pharmacologic Category

Interleukin-1 Beta Inhibitor; Interleukin-1 Inhibitor; Monoclonal Antibody

## Dosing: Adult

**Adult onset Still's disease: SUBQ:** 4 mg/kg every 4 weeks (maximum: 300 mg/dose).

**Cryopyrin-associated periodic syndromes (CAPS): SUBQ:** 150 mg (>40 kg) or 2 mg/kg (15 to 40 kg) every 8 weeks; in clinical trials, dosage adjustments up to 600 mg (>40 kg) or 8 mg/kg (≤40 kg) and/or increased dosing frequency were allowed for residual symptoms (Kuemmerle-Deschner 2011). For inadequate response, a dose titration schedule of 150 mg or 2 mg/kg every 7 days up to a maximum dose of 600 mg or 8 mg/kg (15 to 40 kg) has been recommended (Ilaris Canadian product monograph).

**Familial Mediterranean Fever (FMF), Hyperimmunoglobulin D Syndrome (HIDS)/Mevalonate Kinase Deficiency (MKD), Tumor Necrosis Factor Receptor Associated Periodic Syndrome (TRAPS): SUBQ:** 150 mg (>40 kg) or 2 mg/kg (≤40 kg) every 4 weeks; may increase to 300 mg (>40 kg) or 4 mg/kg (≤40 kg) every 4 weeks if response is not adequate.

**Gout, treatment (acute flares) (alternative agent) (off-label use):**

**Note:** Reserve use for patients who have frequent flares **and** in whom first-line therapies are ineffective, contraindicated, or not tolerated (ACR [FitzGerald 2020]; EULAR [Richette 2017]).

**SUBQ:** 150 mg as a single dose (EULAR [Richette 2017]; Schlesinger 2012).

**Dosage adjustment for concomitant therapy:** Significant drug interactions exist, requiring dose/frequency adjustment or avoidance. Consult drug interactions database for more information.

## Dosing: Renal Impairment: Adult

There are no dosage adjustments provided in the manufacturer's labeling (has not been studied).

## Dosing: Hepatic Impairment: Adult

There are no dosage adjustments provided in the manufacturer's labeling (has not been studied).

## Dosing: Pediatric

(For additional information see "Canakinumab: Pediatric drug information")

**Cryopyrin-associated periodic syndromes (CAPS):** Patient syndromes included in trials were: Familial cold autoinflammatory syndrome (FCAS), Muckle-Wells syndrome (MWS), chronic infantile neurological cutaneous articular syndrome/neonatal onset multisystemic inflammatory disease (CINCA/NOMID), and familial cold urticaria (FCU); data has shown that pediatric patients require higher doses than adults (Kuemmerle-Deschner 2011).

Manufacturer's labeling: Children ≥4 years and Adolescents:

15 to 40 kg: SubQ: Initial: 2 mg/kg/dose every 8 weeks; may increase to 3 mg/kg/dose if response inadequate

>40 kg: SubQ: 150 mg/dose every 8 weeks

Alternate dosing: Limited data available:

Children 2 to <4 years and weighing ≥7.5 kg: SubQ: 4 mg/kg/dose every 8 weeks; if no response after 7 days, may repeat 4 mg/kg dose, if response achieved then may continue patient on intensified maintenance of 8 mg/kg/dose every 8 weeks (Ilaris prescribing information, United Kingdom 2017)

Children ≥4 years and Adolescents:

7.5 kg to <15 kg: SubQ: 4 mg/kg/dose every 8 weeks. If no response after 7 days, may administered a second 4 mg/kg/dose, if full treatment response achieved then may continue patient on intensified maintenance of 8 mg/kg/dose every 8 weeks (Ilaris prescribing information, United Kingdom 2017)

15 kg to 40 kg: SubQ: 2 mg/kg/dose every 8 weeks. If response not satisfactory after 7 days, may repeat 2 mg/kg dose, if full treatment response achieved then may continue patient on intensified maintenance of 4 mg/kg/dose every 8 weeks. If after 7 days (ie, day 14) a satisfactory response still not achieved, may administer another 4 mg/kg dose, if full treatment response achieved then may continue patient on intensified maintenance of 8 mg/kg/dose every 8 weeks (Ilaris prescribing information, United Kingdom 2017; Kuemmerle-Deschner 2011). Another dose-escalation regimen describes titration in 2 mg/kg/dose increments every 7 days up to a maximum dose of 8 mg/kg/dose (Ilaris prescribing information, Canada 2017)

>40 kg: SubQ: 150 mg every 8 weeks. If response not satisfactory after 7 days, may repeat 150 mg/dose, if full treatment response achieved then may continue patient on intensified maintenance of 300 mg every 8 weeks. If after 7 days (ie, day 14) a satisfactory response still not achieved, may administer another 300 mg/dose, if full treatment response achieved then may continue patient on intensified maintenance of 600 mg every 8 weeks (Ilaris prescribing information, United Kingdom 2017; Kuemmerle-Deschner 2011). Another dose-escalation regimen describes titration in 150 mg increments every 7 days up to a maximum dose of 600 mg (Ilaris prescribing information, Canada 2017).

**Familial Mediterranean Fever (FMF):** Children ≥2 years and Adolescents: **Note:** In trial, canakinumab was used as monotherapy and in combination with daily colchicine. Patient weight:

7.5 to 40 kg: SubQ: Initial: 2 mg/kg/dose every 4 weeks; if inadequate response after 7 days may repeat dose (2 mg/kg) and increase maintenance dose to 4 mg/kg/dose every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

>40 kg: SubQ: Initial: 150 mg every 4 weeks; if inadequate response after 7 days may repeat dose (150 mg) and increase maintenance dose to 300 mg every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

**Hyperimmunoglobulin D syndrome (HIDS)/mevalonate kinase deficiency (MKD):** Children ≥2 years and Adolescents: Patient weight:

7.5 to 40 kg: SubQ: Initial: 2 mg/kg/dose every 4 weeks; if inadequate response after 7 days may repeat dose (2 mg/kg) and increase maintenance dose to 4 mg/kg/dose every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

>40 kg: SubQ: Initial: 150 mg every 4 weeks; if inadequate response after 7 days may repeat dose (150 mg) and increase maintenance dose to 300 mg every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

**Juvenile idiopathic arthritis; systemic:** Children ≥2 years weighing at least 7.5 kg and Adolescents: SubQ: 4 mg/kg/dose every 4 weeks; maximum dose: 300 mg

**Tumor necrosis factor receptor associated periodic syndrome (TRAPS):** Children ≥2 years and Adolescents: Patient weight:

7.5 to 40 kg: SubQ: Initial: 2 mg/kg/dose every 4 weeks; if inadequate response after 7 days may repeat dose (2 mg/kg) and increase maintenance dose to 4 mg/kg/dose every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

>40 kg: SubQ: Initial: 150 mg every 4 weeks; if inadequate response after 7 days may repeat dose (150 mg) and increase maintenance dose to 300 mg every 4 weeks if full treatment response (Ilaris prescribing information, Canada 2017; Ilaris prescribing information, United Kingdom 2017)

**Dosage adjustment for concomitant therapy:** Significant drug interactions exist, requiring dose/frequency adjustment or avoidance. Consult drug interactions database for more information.

## Dosing: Renal Impairment: Pediatric

Children ≥2 years and Adolescents: There are no dosage adjustments provided in the manufacturer's labeling; has not been studied.

## Dosing: Hepatic Impairment: Pediatric

Children ≥2 years and Adolescents: There are no dosage adjustments provided in the manufacturer's labeling; has not been studied.

## Dosing: Geriatric

Refer to adult dosing.

## Dosage Forms: US

Excipient information presented when available (limited, particularly for generics); consult specific product labeling. [DSC] = Discontinued product

Solution, Subcutaneous [preservative free]:

Ilaris: 150 mg/mL (1 mL) [contains polysorbate 80]

Solution Reconstituted, Subcutaneous [preservative free]:

Ilaris: 150 mg (1 ea [DSC]) [contains polysorbate 80]

## Generic Equivalent Available: US

No

## Dosage Forms: Canada

Excipient information presented when available (limited, particularly for generics); consult specific product labeling. [DSC] = Discontinued product

Solution, Subcutaneous:

Ilaris: 150 mg/mL (1 mL) [contains polysorbate 80]

Solution Reconstituted, Subcutaneous:

Ilaris: 150 mg ([DSC]) [contains polysorbate 80]

## Medication Guide and/or Vaccine Information Statement (VIS)

An FDA-approved patient medication guide, which is available with the product information and at https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/125319s097lbl.pdf#page=21, must be dispensed with this medication.

## Administration: Adult

**SUBQ:** For subcutaneous injection only by a health care provider. Do not shake solution. Do not inject into scar tissue.

## Administration: Pediatric

SubQ: Do not shake; administer subcutaneously at a concentration of 150 mg/mL by a health care provider; avoid sites with scar tissue

## Use: Labeled Indications

**Adult onset Still's disease:** Treatment of active adult-onset Still's disease.

**Periodic fever syndromes:**

**Cryopyrin-associated periodic syndromes:** Treatment of cryopyrin-associated periodic syndromes (CAPS) in adults and children 4 years and older, including familial cold autoinflammatory syndrome (FCAS) and Muckle-

Wells syndrome (MWS). **Note:** Has also been studied in Neonatal-onset multisystem inflammatory disease (Ilaris Canadian product monograph; Sibley 2015).

**Familial Mediterranean fever:** Treatment of familial Mediterranean fever in adult and pediatric patients.

**Hyperimmunoglobulin D Syndrome (HIDS)/Mevalonate Kinase Deficiency (MKD):** Treatment of hyperimmunoglobulin D (Hyper-IgD) Syndrome (HIDS)/Mevalonate Kinase Deficiency (MKD) in adult and pediatric patients.

**Tumor necrosis factor (TNF) receptor associated periodic syndrome:** Treatment of TNF receptor associated periodic syndrome (TRAPS) in adult and pediatric patients.

**Systemic juvenile idiopathic arthritis:** Treatment of active systemic juvenile idiopathic arthritis (SJIA) in patients 2 years and older.

## Use: Off-Label: Adult

Gout, treatment (acute flares)

## Adverse Reactions

The following adverse drug reactions and incidences are derived from product labeling unless otherwise specified.

>10%:

Endocrine & metabolic: Weight gain (11%)

Gastrointestinal: Diarrhea (20%), gastroenteritis (3% to 11%), nausea (14%), upper abdominal pain (7% to 16%)

Infection: Infection (30% to 55%; serious infection: 2% to 5%), influenza (17%)

Local: Injection site reaction (1% to 12%)

Nervous system: Headache (14%), vertigo (9% to 14%)

Neuromuscular and skeletal: Musculoskeletal pain (11%)

Respiratory: Bronchitis (11%), nasopharyngitis (11% to 34%), pharyngitis (3% to 11%), rhinitis (5% to 17%)

1% to 10%:

Endocrine & metabolic: Decreased serum calcium (8%) (Lachmann 2009)

Genitourinary: Proteinuria (8%) (Lachmann 2009)

Hematologic & oncologic: Decreased neutrophils (transient: ≤7%), decreased platelet count (mild and transient: ≤6%), decreased white blood cell count (10%), eosinophilia (7%) (Lachmann 2009)

Hepatic: Increased serum alanine aminotransferase (≤4%), increased serum aspartate aminotransferase (≤4%), increased serum bilirubin (7%) (Lachmann 2009)

Immunologic: Antibody development (non-neutralizing: 2% to 3%)

Renal: Decreased creatinine clearance (8%) (Lachmann 2009)

Respiratory: Upper respiratory tract infection (7%)

Frequency not defined: Hepatic: Increased serum transaminases

Postmarketing:

Hypersensitivity: Hypersensitivity reaction

Infection: Opportunistic infection

## Contraindications

Hypersensitivity to canakinumab or any component of the formulation

*Canadian labeling:* Additional contraindications (not in US labeling): Active, severe infections

## Warnings/Precautions

***Concerns related to adverse effects:***

• Hematologic effects: A decrease in WBC, neutrophils, and platelets was observed in clinical trials; some changes were transient and/or mild (eg, thrombocytopenia). One case of neutropenia (ANC <1,500/$mm^3$) was reported; monitor blood counts as indicated.

• Hypersensitivity: Hypersensitivity reactions (excluding anaphylactic reactions) have been reported with use; symptoms may be similar to those that are disease related. Discontinue therapy and initiate appropriate therapy if severe hypersensitivity occurs.

• Infections: Caution should be exercised when considering use in patients with a history of new/recurrent infections, with conditions that predispose them to infections, or with latent or localized infections. Patients who develop a new infection while undergoing treatment should be monitored closely. If a patient develops a serious infection, therapy should be discontinued. Therapy should not be initiated in patients with active or chronic infections.

• Macrophage activation syndrome: Macrophage activation syndrome (MAS) may develop in patients with Still's disease and should be treated aggressively. Infection or worsening Still's disease may be triggers for MAS.

• Malignancy: Use may impair defenses against malignancies; impact on the development and course of malignancies is not fully defined.

• Tuberculosis: Avoid use in patients with active tuberculosis (TB). Patients should be evaluated for latent tuberculosis infection with a tuberculin skin test prior to starting therapy. Treat latent TB infections prior to initiating canakinumab therapy. During and following treatment, monitor for signs/symptoms of active TB.

***Dosage form specific issues:***

• Polysorbate 80: Some dosage forms may contain polysorbate 80 (also known as Tweens). Hypersensitivity reactions, usually a delayed reaction, have been reported following exposure to pharmaceutical products containing polysorbate 80 in certain individuals (Isaksson 2002; Lucente 2000; Shelley 1995). Thrombocytopenia, ascites, pulmonary deterioration, and renal and hepatic failure have been reported in premature neonates after receiving

parenteral products containing polysorbate 80 (Alade 1986; CDC 1984). See manufacturer's labeling.

***Other warnings/precautions:***

• Immunizations: All patients should be brought up to date with all immunizations including pneumococcal and influenza vaccines before initiating therapy. Live vaccines should not be given concurrently; no data available on either the efficacy or on the risks concerning secondary transmission of infection by live vaccines in patients receiving therapy. Administration of inactivated (killed) vaccines while on therapy may not be effective.

## Warnings: Additional Pediatric Considerations

Reactivation of TB has been reported in pediatric patients receiving biologic response modifiers (infliximab and etanercept); prior to therapy, patients with no TB risk factors should be screened for latent TB infection (LTBI) with an age appropriate test (ie, <5 years of age: tuberculin skin test, and ≥5 years of age: IGRA [interferon gamma release assay]); if any TB risk factors are present or symptoms, both LTBI screening tests should be performed (AAP [Davies 2016])

Influenza reported in 17% of patients during clinical trials. Vertigo has been reported exclusively in patients with MWS (9% to 14%); events appear self-resolving with continued therapy. Infection reported more frequently in children than adults (Kuemmerle-Deschner 2011) for both CAPS and JIA. Treatment for CAPS has been associated with higher incidence of reported adverse reactions including diarrhea (20%), nasopharyngitis (34%), and rhinitis (17%).

## Metabolism/Transport Effects

None known.

## Drug Interactions

(For additional information: Launch drug interactions program) Lexicomp®

Anti-TNF Agents: May enhance the adverse/toxic effect of Canakinumab. Specifically, the risk for serious infections and/or neutropenia may be increased. *Risk X: Avoid combination*

Baricitinib: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Baricitinib. *Risk X: Avoid combination*

BCG (Intravesical): Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of BCG (Intravesical). Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of BCG (Intravesical). *Risk X: Avoid combination*

Brincidofovir: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Brincidofovir. *Risk C: Monitor therapy*

Cladribine: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Cladribine. *Risk X: Avoid combination*

Coccidioides immitis Skin Test: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the diagnostic effect of Coccidioides immitis Skin Test. Management: Consider discontinuing therapeutic immunosuppressants several weeks prior to coccidioides immitis skin antigen testing to increase the likelihood of accurate diagnostic results. *Risk D: Consider therapy modification*

COVID-19 Vaccine (Adenovirus Vector): Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of COVID-19 Vaccine (Adenovirus Vector). *Risk C: Monitor therapy*

COVID-19 Vaccine (Inactivated Virus): Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of COVID-19 Vaccine (Inactivated Virus). *Risk C: Monitor therapy*

COVID-19 Vaccine (mRNA): Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of COVID-19 Vaccine (mRNA). Management: Consider administration of a 3rd dose of COVID-19

vaccine, at least 28 days after completion of the primary 2-dose series, in patients taking immunosuppressive therapies. *Risk D: Consider therapy modification*

Dengue Tetravalent Vaccine (Live): Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Dengue Tetravalent Vaccine (Live). Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Dengue Tetravalent Vaccine (Live). *Risk X: Avoid combination*

Denosumab: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Denosumab. Management: Consider the risk of serious infections versus the potential benefits of coadministration of denosumab and immunosuppressants. If combined, monitor for signs/symptoms of serious infections. *Risk D: Consider therapy modification*

Echinacea: May diminish the therapeutic effect of Immunosuppressants (Therapeutic Immunosuppressant Agents). Management: Consider avoiding echinacea in patients receiving therapeutic immunosuppressants. If coadministered, monitor for reduced efficacy of the immunosuppressant during concomitant use. *Risk D: Consider therapy modification*

Fingolimod: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Fingolimod. *Risk C: Monitor therapy*

Inebilizumab: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Inebilizumab. *Risk C: Monitor therapy*

Influenza Virus Vaccines: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Influenza Virus Vaccines. Management: Administer influenza vaccines at least 2 weeks prior to initiating immunosuppressants if possible. If vaccination occurs less than 2 weeks prior to or during therapy, revaccinate 2 to 3 months after therapy discontinued if immune competence restored. *Risk D: Consider therapy modification*

Interleukin-1 Inhibitors: May enhance the adverse/toxic effect of Canakinumab. *Risk X: Avoid combination*

Interleukin-1 Receptor Antagonist: May enhance the adverse/toxic effect of Canakinumab. *Risk X: Avoid combination*

Leflunomide: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Leflunomide. Management: Increase the frequency of chronic monitoring of platelet, white blood cell count, and hemoglobin or hematocrit to monthly, instead of every 6 to 8 weeks, if leflunomide is coadministered with immunosuppressive agents. *Risk D: Consider therapy modification*

Natalizumab: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Natalizumab. *Risk X: Avoid combination*

Ocrelizumab: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Ocrelizumab. *Risk C: Monitor therapy*

Ofatumumab: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Ofatumumab. *Risk C: Monitor therapy*

Ozanimod: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Ozanimod. *Risk C: Monitor therapy*

Pidotimod: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Pidotimod. *Risk C: Monitor therapy*

Pimecrolimus: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Pimecrolimus. *Risk X: Avoid combination*

Poliovirus Vaccine (Live/Trivalent/Oral): Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Poliovirus Vaccine (Live/Trivalent/Oral). Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Poliovirus Vaccine (Live/Trivalent/Oral). *Risk X: Avoid combination*

Polymethylmethacrylate: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the potential for allergic or hypersensitivity reactions to Polymethylmethacrylate. Management: Use caution when considering use of bovine collagen-containing implants such as the polymethylmethacrylate-based Bellafill brand implant in patients who are receiving immunosuppressants. Consider use of additional skin tests prior to administration. *Risk D: Consider therapy modification*

Ponesimod: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Ponesimod. *Risk C: Monitor therapy*

Rabies Vaccine: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Rabies Vaccine. Management: Complete rabies vaccination at least 2 weeks before initiation of immunosuppressant therapy if possible. If post-exposure rabies vaccination is required during immunosuppressant therapy, administer a 5th dose of vaccine and check for rabies antibodies. *Risk D: Consider therapy modification*

Rubella- or Varicella-Containing Live Vaccines: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Rubella- or Varicella-Containing Live Vaccines. Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Rubella- or Varicella-Containing Live Vaccines. *Risk X: Avoid combination*

Ruxolitinib (Topical): Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Ruxolitinib (Topical). *Risk X: Avoid combination*

Siponimod: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Siponimod. *Risk C: Monitor therapy*

Sipuleucel-T: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Sipuleucel-T. Management: Consider reducing the dose or discontinuing the use of immunosuppressants prior to initiating sipuleucel-T therapy. *Risk D: Consider therapy modification*

Tacrolimus (Topical): Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Tacrolimus (Topical). *Risk X: Avoid combination*

Talimogene Laherparepvec: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Talimogene Laherparepvec. Specifically, the risk of infection from the live, attenuated herpes simplex virus contained in talimogene laherparepvec may be increased. *Risk X: Avoid combination*

Tertomotide: Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Tertomotide. *Risk X: Avoid combination*

Tofacitinib: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Tofacitinib. Management: Coadministration of tofacitinib with potent immunosuppressants is not recommended. Use with non-biologic disease-modifying antirheumatic drugs (DMARDs) was permitted in psoriatic arthritis clinical trials. *Risk X: Avoid combination*

Typhoid Vaccine: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Typhoid Vaccine. Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Typhoid Vaccine. *Risk X: Avoid combination*

Upadacitinib: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the immunosuppressive effect of Upadacitinib. *Risk X: Avoid combination*

Vaccines (Inactivated): Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Vaccines (Inactivated). Management: Give inactivated vaccines at least 2 weeks prior to initiation of immunosuppressants when possible. Patients vaccinated less than 14 days before initiating or during therapy should be revaccinated at least 2 to 3 months after therapy is complete. *Risk D: Consider therapy modification*

Vaccines (Live): May enhance the adverse/toxic effect of Immunosuppressants (Therapeutic Immunosuppressant Agents). Specifically, the risk of vaccine-associated infection may be increased. Vaccines (Live) may diminish the therapeutic effect of Immunosuppressants (Therapeutic Immunosuppressant Agents). *Risk X: Avoid combination*

Yellow Fever Vaccine: Immunosuppressants (Therapeutic Immunosuppressant Agents) may enhance the adverse/toxic effect of Yellow Fever Vaccine. Specifically, the risk of vaccine-associated infection may be increased. Immunosuppressants (Therapeutic Immunosuppressant Agents) may diminish the therapeutic effect of Yellow Fever Vaccine. *Risk X: Avoid combination*

## Reproductive Considerations

Fertility may be decreased in males and females with inflammatory diseases such as familial Mediterranean fever. Based on case reports, treatment with canakinumab may improve fertility (Babaoglu 2020; Youngstein 2017).

## Pregnancy Considerations

Canakinumab crosses the placenta; newborn concentrations may be greater than maternal serum concentrations at delivery (Egawa 2017).

Canakinumab is a recombinant IgG monoclonal antibody; IgG is known to cross the placenta in a linear fashion as pregnancy progresses; potential fetal exposure is likely to be greater during the second and third trimesters.

Information related to the use of canakinumab in pregnancy is limited (Babaoglu 2020; Egawa 2017; Youngstein 2017). Other agents are currently preferred for the treatment of adult onset Still's disease (Jamilloux 2014) or familial Mediterranean fever (EULAR [Ozen 2016]) in pregnant patients.

## Breast-Feeding Considerations

It is not known if canakinumab is present in breast milk. However, canakinumab is a recombinant IgG monoclonal antibody; human IgG is present in breast milk. Information related to the use of canakinumab in breastfeeding women is limited, however no serious infections and no abnormal development were reported in four

breastfed infants (complete details of exposure not presented) (Youngstein 2017). According to the manufacturer, the decision to breastfeed during therapy should consider the risk of infant exposure, the benefits of breastfeeding to the infant, and the benefits of treatment to the mother.

## Monitoring Parameters

CBC with differential, C-reactive protein (CRP), serum amyloid A protein A (SAA); signs of infection; latent TB screening (prior to initiating therapy).

Eye examinations for patients with CAPS (Caorsi 2013) and symptoms of disease for patients with CAPS or SJIA (Caorsi 2013; Lachmann 2009; Ruperto 2012) were also monitored in clinical trials.

## Mechanism of Action

Canakinumab reduces inflammation by binding to interleukin-1 beta (IL-1beta) (no binding to IL-1 alpha or IL-1 receptor antagonist [IL-1ra]) and preventing interaction with cell surface receptors. Cryopyrin-associated periodic syndromes (CAPS) refers to rare genetic syndromes caused by mutations in the nucleotide-binding domain, leucine rich family (NLR), pyrin domain containing 3 (NLRP-3) gene or the cold-induced autoinflammatory syndrome-1 (CIAS1) gene. Cryopyrin, a protein encoded by this gene, regulates IL-1beta activation. Deficiency of cryopyrin results in excessive inflammation.

## Pharmacodynamics and Pharmacokinetics

Onset of action: Maximum effect: Within 8 days CRP and serum amyloid normalization

Distribution: $V_{dss}$: Children: 0.097 L/kg (3.2 L in 33 kg); Adults: CAPS: 0.086 L/kg (6 L in 70 kg); FMF, HIDS/MKD, TRAPS: 0.09 L/kg (6.34 L in 70 kg).

Protein binding: Binds to serum IL-1 beta

Bioavailability: Subcutaneous: 66%

Half-life elimination: Children ≥4 years: 22.9 to 25.7 days; Adults: 26 days

Time to peak, serum: Children ≥4 years: 2 to 7 days; Adults: ~7 days

Clearance: Varies according to body weight:

Children ≤40 kg: SJIA: 0.11 L/day in 33 kg

Children >40 kg and Adults: CAPS: 0.174 L/day in 70 kg

Children, Adolescents, and Adults: FMF, HIDS/MKD, TRAPS: 0.17 L/day in 70 kg

## Pricing: US

**Solution** (Ilaris Subcutaneous)

150 mg/mL (per mL): $20,044.36

**Disclaimer:** A representative AWP (Average Wholesale Price) price or price range is provided as reference price only. A range is provided when more than one manufacturer's AWP price is available and uses the low and high price reported by the manufacturers to determine the range. The pricing data should be used for benchmarking purposes only, and as such should not be used alone to set or adjudicate any prices for reimbursement or purchasing functions or considered to be an exact price for a single product and/or manufacturer. Medi-Span expressly disclaims all warranties of any kind or nature, whether express or implied, and assumes no liability with respect to accuracy of price or price range data published in its solutions. In no event shall Medi-Span be liable for special, indirect, incidental, or consequential damages arising from use of price or price range data. Pricing data is updated monthly.

## Brand Names: International

Ilaris (AE, AR, AT, BE, BH, BR, CH, CY, CZ, DE, DK, EE, ES, FR, GB, GR, HK, HR, HU, IE, IL, IT, JP, KR, LT, LU, MT, NL, NO, PL, PT, QA, RU, SA, SE, SG, SI, SK, TR, UA)

For country abbreviations used in Lexicomp ( show table)



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