These Clinical Guidelines have been created using resources that were current as of the "Reviewed" date noted at the beginning of the document. Clinicians should refer to the manufacturer's Prescribing Information (or equivalent) for the most up-to-date information. While CarepathRx has published these Clinical Guidelines after a close review of available literature and a clinical review process, given the evolving nature and complexity of modern pharmaceutical products, CarepathRx does not and cannot warrant or guarantee that these Clinical Guidelines reflect the objectively best or highest standard of care at any given time.

Nothing within these Clinical Guidelines is intended to supersede or interfere with any individual clinician's decision-making or professional judgment with respect to either (1) prescribing or dispensing the drug or product in question or (2) the overall treatment plan for an individual patient.

Secukinumab (Cosentyx) Clinical Guideline for Home Intravenous Therapy

Section: Clinical Guidelines
Compliance: ACHC Infusion Pharmacy
ACHC Standards: N/A
URAC Standards: N/A
Policy ID: CG009
Effective: 3/1/2024
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Revised: N/A
Approved by, Title and Date Approved: Kathleen Patrick, President, 3/1/2024

I. BACKGROUND

Secukinumab is a human IgG1 monoclonal antibody that selectively binds to the interleukin-17A (IL-17A) cytokine and inhibits its interaction with IL-17 receptor. IL-17A is a naturally occurring cytokine that is involved in normal inflammatory and immune responses; however, it is overproduced in patients who suffer from immune mediated inflammatory conditions. Secukinumab has been shown to improve these conditions by inhibiting the release of proinflammatory cytokines and chemokines such as IL-17A. Secukinumab is indicated for the treatment of various immune-mediated inflammatory disorders such as plaque psoriasis, psoriatic arthritis, and active ankylosing spondylitis. The following outlines the procedures for servicing patients in need of outpatient intravenous secukinumab infusions.

II. PATIENT ACCEPTANCE CRITERIA

A. All candidates for home care service must be evaluated by the clinician(s) and deemed appropriate to receive home care based upon the dispensing pharmacy's admission criteria.

B. The decision to administer a first dose in the home by a field nurse will be determined on a case-by-case basis and reviewed by nursing and pharmacy management. The following criteria will be evaluated:

1. Prescriber preference
2. Allergy profile
3. Age ≥18 years
4. Other relevant social and/or medical history

C. Physician orders for secukinumab must include:

1. Patient weight
2. Drug and dose (including weight-based dosing)
3. Route of administration
4. Frequency of administration
5. Emergency medications per protocol
6. Orders for pre-medications, if applicable
7. Line care protocol

D. Baseline labs or tests prior to starting therapy: Patients MUST have tuberculosis (TB) screening prior to initiation of therapy.

E. Other patient specific information that may be helpful (but are not required to start therapy) include CMP, CBC with differential, hepatitis B virus (HBV) screening, hepatitis C virus screening, HIV screening in high-risk patients, signs and symptoms of infection or inflammatory bowel disease, and vaccination status.

F. Dispensing pharmacy treatment protocol for anaphylaxis will be instituted unless a more comprehensive patient-specific orders are provided by physician. See policy, Management of Allergic/Anaphylactic Reactions (Appendix A)

III. PHARMACOLOGY OVERVIEW

Refer to manufacturer's full Prescribing Information for most up to date information.

A. Indications for Intravenous Infusion:

1. Adults with active psoriatic arthritis (PsA)
2. Adults with active ankylosing spondylitis (AS)
3. Adults with active non-radiographic axial spondyloarthritis (nr-axSpA) with objective signs of inflammation

**Subcutaneous dosing and administration will not be discussed in the scope of this guideline*

B. Dosing

1. Dosage in Adults with Psoriatic Arthritis (PsA), Ankylosing Spondylitis (AS), Non-Radiographic Axial Spondyloarthritis (nr-axSpA):
Secukinumab may be administered with or without methotrexate in PsA.

With a Loading Dosage	Loading dosage: 6mg/kg given at Week 0 Maintenance dosage: 1.75 mg/kg (do not exceed 300 mg/dose) every 4 weeks
Without a Loading Dosage	1.75 mg/kg (do not exceed 300 mg/dose) every 4 weeks

Dosing is based off actual body weight. Secukinumab has not been studied in extremes of body Weights

C. Dose Adjustment: There are no dosage adjustments provided in the manufacturer's labeling. No formal trial of the effect of hepatic or renal impairment on the PK of secukinumab was conducted.

D. Duration: Duration of therapy should be dependent on patient response and adverse reactions.

E. Contraindications: Serious hypersensitivity to secukinumab or any component of the formulation.

F. Warnings and Precautions: *The safety of intravenous secukinumab is based on the pharmacokinetic exposure and extrapolation of the established safety of subcutaneous secukinumab in PsA, AS, and nr -axSpA patients.*

1. **Infections**: Secukinumab may increase the risk of infections. Serious and sometimes fatal infections have been reported. A higher rate of infections was observed in clinical trials, including nasopharyngitis, upper respiratory tract infection, and mucocutaneous candida infection. The incidence of some types of infections appeared to be dose-dependent. Use with caution in patients with a chronic infection or a history of recurrent infection. If a patient develops a serious infection, monitor the patient closely and discontinue secukinumab until infection resolves.
2. **Hypersensitivity Reactions:** Urticaria and anaphylaxis have been reported. If an anaphylactic reaction or other serious allergic reaction occurs, discontinue secukinumab immediately and initiate appropriate therapy.
3. **Pre-Treatment Evaluation for Tuberculosis (TB):** Prior to initiating treatment with secukinumab, evaluate patients for active or latent TB infection. Avoid administration of secukinumab to patients with active TB infection. Initiate treatment of latent TB prior to administering secukinumab. Consider anti-TB therapy prior to initiation of secukinumab in patients with a history of latent or active TB in whom an adequate course of treatment cannot be confirmed. Monitor patients closely for signs and symptoms of active TB during and after treatment.
4. **Inflammatory Bowel Disease (IBD):** Treatment with secukinumab may cause exacerbations and new onset of inflammatory bowel disease. Exercise caution when initiating secukinumab in patients with IBD. Patients treated with secukinumab should be monitored for signs and symptoms of IBD.
5. **Eczematous Eruptions:** Cases of severe eczematous eruptions (sometimes requiring hospitalization), including dermatitis-like eruptions, dyshidrotic eczema, and erythroderma, have been reported. The onset was variable, ranging from days to months after the first dose of secukinumab. Treatment may need to be discontinued to resolve the eczematous eruption. Some patients were successfully treated for eczematous eruptions while continuing treatment.
6. **Immunizations:** Prior to initiating therapy, consider completion of all age-appropriate immunizations according to current immunization guidelines. Secukinumab may alter immune response to live vaccines. Avoid use of live vaccines in patients treated with secukinumab.
7. **Pregnancy and Lactation:** Available human data on the use of secukinumab in pregnant women are insufficient to inform a drug-associated risk of adverse developmental outcomes. Secukinumab is a humanized monoclonal antibody (IgG1). Placental transfer of human IgG is dependent upon the IgG subclass, maternal serum concentrations, birth weight, and gestational age, generally increasing as pregnancy progresses. It is not knoinwn whether secukinumab is excreted in human milk or absorbed systemically after ingestion. There are no data on the effects of secukinumab on the breastfed child or the effects on milk production. The lack of data during lactation makes it difficult to determine the risk of secukinumab to an infant during lactation, therefore the developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for secukinumab, and any potential adverse effects on the breastfed child from secukinumab or from the underlying maternal condition.

    a. **Pediatrics:** The safety and efficacy of intravenous secukinumab in pediatric patients have not been established.
    b. **Immunogenicity**: In clinical trials, less than 1% of patients treated with secukinumab developed antibodies to secukinumab in up to 52 weeks of treatment. Data is limited and providers may order labs to check for antibodies if clinically indicated.

G. Pharmacokinetics: **The pharmacokinetic parameters of IV secukinumab are extrapolated from established data from subcutaneous secukinumab.* Following an IV administration of 1.75 mg/kg maintenance dose every four weeks, with or without a loading dose of 6 mg/kg at Day 0, the secukinumab concentrations are estimated to be within the range of the steady state concentrations following subcutaneous administration of 150 mg and 300 mg doses of secukinumab administered every four weeks.

1. Distribution: Vd: SubQ: 7.1-8.6 L
2. Metabolism: Expected to be degraded into smaller peptides and amino acids via catabolic pathways similar to that which is seen with endogenous IgG
3. Half-life elimination: SubQ: 22-31 days

H. Adverse Reactions **The safety of IV secukinumab is based on the pharmacokinetic exposure and extrapolation of the established safety of subcutaneous secukinumab in PsA, AS and nr-axSpA patients.*

1. Infections: Infection 29% to 48%; serious infection $\leq$ 1%; fungal infection 4% to 5%
2. Respiratory: Nasopharyngitis 11% to 12%; pharyngitis 1%, rhinitis 1%; rhinorrhea $\leq$ 1%; upper respiratory tract infection 3%; sinusitis, tonsilitis < 1%
3. Dermatologic: Urticaria $\leq$ 1%; impetigo, tinea pedis, < 1%
4. Endocrine and metabolic: Hypercholesterolemia $\geq$ 2%
5. Gastrointestinal: Diarrhea 3% to 4%; inflammatory bowel disease $\leq$ 1%; mucocutaneous candidiasis 1%; nausea $\geq$ 2%; oral herpes simplex infection $\leq$ 1%; oral candidiasis < 1%
6. Nervous system: Headache $\geq$ 2%
7. Hematologic & oncologic: Neutropenia < 1%
8. Immunologic: Antibody development < 1%Ophthalmic: Conjunctivitis < 1%
9. Otic: Otitis externa, otitis media < 1%
10. Hypersensitivity: anaphylaxis
11. IV formulation post marketing experience: Eczematous eruptions, pyoderma gangrenosum

I. Drug Interactions: Drug-drug interactions may exist. Consult interaction database for patient specific assessment. Upon initiation or discontinuation of secukinumab in patients who are receiving concomitant CYP450 substrates, particularly those where minimal decreases in the concentration may reduce CYP substrate effectiveness or minimal increases in the concentration may increase CYP substrate adverse reactions, consider monitoring for therapeutic effect or concentration of the CYP substrate and consider dosage adjustment of the CYP substrate as needed.

IV. ADMINISTRATIVE GUIDELINES

A. Administration- IV infusions should be given immediately after reconstitution and dilution. Complete infusion within 4 hours of preparation per current USP Immediate-Use Guidelines.

B. **Dilute prior to use. Infuse using an infusion set with an in-line, sterile, non-pyrogenic, low protein binding 0.2- micron filter.**

C. Do not infuse secukinumab concomitantly in the same IV line with other medications.

D. Secukinumab vials for IV infusion are for use in adult patients only.

V. NURSING PROCEDURE

A. Supplies may include but are not limited to:

1. Alcohol Swabs
2. Gloves
3. Tape
4. Peripheral IV access supplies for patients requiring peripheral IV access
a. IV start Kit
b. Peripheral IV catheter (ex. 22 Gauge x1" and 24 Gauge x ¾")
c. Extension set 8" with needless connector
5. If applicable, Central Venous Access Catheter (CVAD) Dressing Change and needless connectors if patient has a central line, and non-coring needle set if the CVAD is an implanted port.
6. IV Pole
7. IV administration set (flow regulator [ex: dial-a-flow] or gravity) with in-line or add-on **0.22 micron** low protein binding **filter**
8. Syringes (10mL, 20mL, or 30mL) with needles (20 G x 1")
9. Sharps container

B. Prescription items:

1. Secukinumab vials
2. Diluent bags
a. 50 or 100 mL 0/9% Sodium Chloride for Injection stock bags (see table for preparation of infusion to select correct bag volume)
3. 50 mL 0.9% Sodium Chloride for Injection, USP post infusion flush bag

C. How Supplied: Secukinumab injection is a clear to opalescent, colorless to slightly yellow solution. It is supplied as 125 mg/5mL solution in a single-dose vial for dilution prior to IV infusion.

D. Storage and Handling: Refrigerate vials at 2ºC to 8ºC (36ºF to 46ºF) in original carton and protected from light until time of use. Do not freeze. To avoid foaming, do not shake. Secukinumab does not contain a preservative; discard any unused portion.

E. Compatibility

1. Compatible with 0.9% Sodium Chloride for Injection, USP

F. Procedures:

1. Explain the reasoning for visit and use of secukinumab.
2. Don gloves.
3. Assess for signs and symptoms of infection prior to establishing venous access and preparing medication.
4. Establish venous access prior to preparation of drug.
5. Counsel patient on warnings, precautions, and potential side effects including but not limited to: Serious allergic reactions, inflammatory bowel disease or flare-ups, severe skin reactions that look like eczema, cold symptoms, diarrhea, upper respiratory tract infections.
6. Prepare Infusion

a. Before dilution, allow the vial to sit for approximately 20 minutes at room temperature 20ºC to 25ºC (68ºF to 77ºF). Inspect the vial visually for particulate matter and discoloration prior to administration. Do not use if particulates or discoloration are noted.
b. Calculate the dose (mg), total volume (mL) of solution, and number of vials needed based on patient's actual body weight according to the following equation:

Loading Dose:
Volume (mL) = body weight (kg) x prescribed dose (6 mg/kg) / Concentration of secukinumab 25 mg/mL
Maintenance Dose (Max dose 300 mg):
Volume (mL) = body weight (kg) x prescribed dose (1.75 mg/kg) / Concentration of secukinumab 25 mg/mL

Use number of vials based on total volume needed (one vial contains 5 mL of solution)

c. Select the recommended infusion bag for dilution and preparation of secukinumab for IV use based on body weight and dose:

Actual body weight	For loading dose (6 mg/kg) recommended infusion bag	For maintenance dose (1.75 mg/kg) recommended infusion bag
Greater than 52 kg	100 mL	100 mL
Less than or equal to 52 kg	100 mL	50 mL

d. From the infusion bag, withdraw and discard a volume of 0.9% Sodium Chloride Injection, USP, equal to the calculated volume of secukinumab solution required for the patient's dose.

e. From the vial(s), withdraw the calculated volume (mL) of secukinumab solution and add slowly into the 0.9% Sodium Chloride Injection, USP infusion bag. Total volume will be either 50 mL or 100 mL depending on the patient's weight and whether they will be receiving either a loading or maintenance dose. To mix the solution, gently invert the bag to avoid foaming. Do not shake.

7. Infusion Rates: Administer over 30 minutes (approximately 198 mL/hr for a 100 mL bag or 102 mL/hr for a 50 mL bag).

8. After administration of secukinumab, flush the administration tubing set by spiking a 50 mL of 0.9% Sodium Chloride Injection bag or larger and infusing at least 50mL at the same rate as the secukinumab.

9. Post infusion monitoring: Monitor patient and vital signs periodically during the infusion and 30 minutes after the infusion is complete per CarepathRx policy on *Nursing Best Practice Administration Guidelines.*

VI. CLINICAL MONITORING

A. Prior to therapy

1. Tuberculosis screening

2. Signs and symptoms of infection
3. Signs and symptoms inflammatory bowel disease
4. Assessment of up-to-date vaccination status

B. During therapy

1. Signs and symptoms of infection – therapy may need to be interrupted during active infection
2. New or worsening inflammatory bowel disease - symptoms include abdominal pain and cramping, diarrhea, other changes in stool, etc.
3. Signs and symptoms of hypersensitivity reactions and/or infusion related reactions

C. Disease progression and therapy efficacy

1. PsA: Joint pain and swelling, skin condition, nail condition, enthesitis symptoms
2. AS: Back pain, joint pain, stiffness, fatigue
3. Nr-axSpA: Back pain, stiffness, reduced flexibility, enthesitis symptoms

Please refer to the package insert for the most up to date guidance on this medication.

REFERENCES:

1. Cosentyx (Secukinumab) [package insert]. East Hanover, NJ : Novartis; October, 2023.
2. Secukinumab. Lexi-Drugs. Lexicomp. Wolters Kluwer Health, Inc. Riverwoods, IL.
3. United States Pharmacopeia (USP). General Chapter, <797> Pharmaceutical Compounding—Sterile Preparations. (2023) USP-NF. Rockville, MD: United States Pharmacopeia. Accessed November 29, 2023.

APPENDIX A: ANAPHYLAXIS KIT INTRUCTIONS

Emergency Medication After Your Infusion

Please call your pharmacy if you have any questions or concerns. In the event of an emergency, always call 911.

Your nurse will tell you when you need to use Emergency Medications.
The epinephrine dose will be noted on the Anaphylaxis Protocol included with your kit.

Start with a clean work surface and clean hands.

Open the supply bag labeled Anaphylaxis Kit Contents.

You will need:

1. **Bag containing Pills** (2 Acetaminophen and 2 Diphenhydramine)
2. **Bag containing Alcohol Prep Pads**
3. **Bag labeled IM Epinephrine**

All other contents will not be needed.

Open the IM Epinephrine Bag

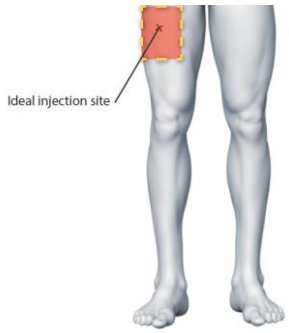
1. **Remove 1 of each item**
    a. 1 -syringe
    b. 1 – brown labeled filter needle (BD Filter Needle)- **for ampul use only**
    c. 1 – black labeled safety needle (Magellan Hypodermic Safety Needle 22G x 1”)
    d. 1 ampul of epinephrine

Prepare IM (intramuscular) injection of Epinephrine:

1. **Attach the brown filtered needle to syringe**
    a. Be careful to not touch the tip of the syringe or the needle.
2. Using an **alcohol swab, wipe the neck of the epinephrine ampul.**
3. Holding the ampul upright, **swirl and flick the ampul until all fluid flows to the bottom chamber** (the top chamber should be empty).
4. Using a new alcohol wipe, grasp the neck of the ampul and with your other hand grasp the bottom chamber of the ampul. **Quickly snap the top of the ampul off, directing the snap way from you.**

5. **Place the tip of the brown filter needle inside the ampul**. Tilting the ampul, **withdraw dose of medication into the syringe** by gently pulling back on the plunger. Be careful to not pull the plunger out of the syringe.
6. Remove the needle from the ampul and h**old the syringe upright** with the needle pointing upward. **Gently tap the side of the syringe to bring any air to the top of the syringe.**
7. **Push the air out of the syringe by gently pushing on the plunger**.
8. Replace the cap on the brown filter needle. Discard remainder in ampul.
9. **Remove the brown filter needle and place the black safety needle onto the syringe.**

Give your IM Epinephrine injection



1. **Grasp your leg muscle at the outer mid-thigh** and **cleanse the area** with a new alcohol wipe.
2. **Push the needle into your leg muscle straight** in at a 90-degree angle.
3. **Inject the medication** by depressing the plunger in a slow and steady motion.
4. **Remove the needle** and wipe the site with the alcohol wipe.
5. May repeat dose every 5 minutes (**maximum 3 doses**) if ordered per protocol.

Take the pills by mouth.

a. 2 – Acetaminophen
b. 2 – Diphenhydramine

Place all trash in the bag the pills came in and take with you when you seek medical care. **Give the bag to the nurse or EMT**, so your doctor will know what medication you already took. They will properly dispose of the syringe and needles.
Call 911 or have someone drive you to the emergency department.