

Semaglutide Comprehensive Dosing Guide (5 mg, 10 mg & 20 mg Specifications)

I. Overview

Semaglutide is a glucagon-like peptide-1 (GLP-1) receptor agonist with a half-life of approximately 7 days[1]. It is approved for chronic weight-management and glycaemic control. Its prolonged half-life enables once-weekly subcutaneous injection as the standard clinical approach[1]. This educational protocol presents a once-weekly subcutaneous-injection regimen titrated gradually from 0.25 mg up to a maintenance dose of 2.4 mg over more than 16 weeks, with practical dilution ratios for accurate measurement using insulin syringes. This guideline covers dosing protocols for 5 mg, 10 mg and 20 mg vial specifications.

Research Background: Refer to relevant Semaglutide peptide reviews for evidence regarding mechanism of action, human and pre-clinical studies, limitations and safety.

II. Dosing & Reconstitution Guidelines

5 mg Specification

Reconstitution: Add 2.0 mL bacteriostatic water → concentration approx. 2.5 mg/mL

U-100 insulin syringe conversion: 1 unit = 0.01 mL ≈ 25 mcg

Post-reconstitution shelf-life: Use within 28 days under refrigeration (2-8°C)[8]

10 mg Specification

Reconstitution: Add 3.0 mL bacteriostatic water → concentration approx. 3.33 mg/mL

U-100 insulin syringe conversion: 1 unit = 0.01 mL ≈ 33.3 mcg

Post-reconstitution shelf-life: Use within 28 days under refrigeration (2-8°C)[8]

20 mg Specification

Reconstitution: Add 3.0 mL bacteriostatic water → concentration approx. 6.67 mg/mL

U-100 insulin syringe conversion: 1 unit = 0.01 mL ≈ 66.7 mcg

Post-reconstitution shelf-life: Use within 28 days under refrigeration (2-8°C)[8]

Standard / Progressive Titration Protocol (Once-Weekly, Subcutaneous Injection)

All specifications follow the identical weekly-dose regimen; injection volume (syringe units) varies due to differing concentrations.

Weeks	Weekly Dose	5 mg Specification (2.5 mg/mL)	10 mg Specification (3.33 mg/mL)	20 mg Specification (6.67 mg/mL)
Weeks 1-4	250 mcg (0.25 mg)	10 units (0.10 mL)	7.5 units (0.075 mL)	4 units (0.04 mL)
Weeks 5-8	500 mcg (0.5 mg)	20 units (0.20 mL)	15 units (0.15 mL)	7.5 units (0.075 mL)
Weeks 9-12	1000 mcg (1.0 mg)	40 units (0.40 mL)	30 units (0.30 mL)	15 units (0.15 mL)
Weeks 13-16	1700 mcg (1.7 mg)	68 units (0.68 mL)	51 units (0.51 mL)	25.5 units (0.255 mL)
Week 17+ (Maintenance)	2400 mcg (2.4 mg)	96 units (0.96 mL)	72 units (0.72 mL)	36 units (0.36 mL)

Frequency: Once-weekly subcutaneous injection.

Titration Note: This gradual-titration protocol improves tolerability and aligns with FDA-approved weight-management dosing strategies[1][3].

Administer on a fixed day each week; injection may be given with or without meals.

5 mg Specification Note: Reconstituting with 2.0 mL (instead of 3.0 mL) keeps the maximum maintenance-dose injection volume below 1.0 mL per shot.

III. Reconstitution Procedure

1. Withdraw the specified volume of bacteriostatic water using a sterile syringe (2.0 mL for 5 mg vials; 3.0 mL for 10 mg and 20 mg vials).
2. Inject slowly along the inner vial wall to minimise foam formation; do not shake.
3. Gently swirl or roll the vial until powder dissolves completely.
4. Label with reconstitution date; store refrigerated at 2-8°C (35.6-46.4°F), protected from light.

This dosage reference is for informational and research purposes only.
It does not replace professional medical advice and is not for human consumption.

5. Use within 28 days after reconstitution to preserve full potency and safety[8].

IV. Required Supplies

5 mg Specification (8-20-Week Planning)

Peptide vials (Semaglutide, 5 mg per vial):

8 weeks $\approx$ 1 vial (total consumption 3 mg)

12 weeks $\approx$ 2 vials (total consumption 7 mg)

16 weeks $\approx$ 3 vials (total consumption 13.8 mg)

20 weeks $\approx$ 5 vials (including maintenance dose, total consumption 23.4 mg)

Insulin syringes (U-100):

Weekly: 1 syringe

8 weeks: 8 syringes

12 weeks: 12 syringes

16 weeks: 16 syringes

20 weeks: 20 syringes

Bacteriostatic water (10 mL vials): Approx. 2.0 mL required per vial for reconstitution. Use bacteriostatic water within 28 days after opening[9].

8 weeks (1 vial): 2 mL $\rightarrow$ 1 $\times$ 10 mL vial

12 weeks (2 vials): 4 mL $\rightarrow$ 1 $\times$ 10 mL vial

16 weeks (3 vials): 6 mL $\rightarrow$ 1 $\times$ 10 mL vial

20 weeks (5 vials): 10 mL $\rightarrow$ 1 $\times$ 10 mL vial

Alcohol swabs: 2 swabs per week (one for vial stopper, one for injection site).

8 weeks: 16 swabs

12 weeks: 24 swabs

16 weeks: 32 swabs

20 weeks: 40 swabs $\rightarrow$ recommended: 1 box $\times$ 100-count

10 mg Specification (8-20-Week Planning)

Peptide vials (Semaglutide, 10 mg per vial):

8 weeks $\approx$ 1 vial (total consumption 3 mg)

12 weeks $\approx$ 1 vial (total consumption 7 mg)

16 weeks $\approx$ 2 vials (total consumption 13.8 mg)

20 weeks $\approx$ 3 vials (including maintenance dose, total consumption 23.4 mg)

Insulin syringes (U-100):

Weekly: 1 syringe

8 weeks: 8 syringes

12 weeks: 12 syringes

16 weeks: 16 syringes

20 weeks: 20 syringes

Bacteriostatic water (10 mL vials): Approx. 3.0 mL required per vial for reconstitution. Use bacteriostatic water within 28 days after opening[9].

8 weeks (1 vial): 3 mL $\rightarrow$ 1 $\times$ 10 mL vial

12 weeks (1 vial): 3 mL $\rightarrow$ 1 $\times$ 10 mL vial

16 weeks (2 vials): 6 mL $\rightarrow$ 1 $\times$ 10 mL vial

20 weeks (3 vials): 9 mL $\rightarrow$ 1 $\times$ 10 mL vial

Alcohol swabs: 2 swabs per week.

8 weeks: 16 swabs

12 weeks: 24 swabs

16 weeks: 32 swabs

20 weeks: 40 swabs $\rightarrow$ recommended: 1 box $\times$ 100-count

20 mg Specification (8-20-Week Planning)

Peptide vials (Semaglutide, 20 mg per vial):

8 weeks $\approx$ 1 vial (total consumption 3 mg)

12 weeks $\approx$ 1 vial (total consumption 7 mg)

16 weeks $\approx$ 1 vial (total consumption 13.8 mg)

20 weeks $\approx$ 2 vials (including maintenance dose, total consumption 23.4 mg)

Insulin syringes (U-100):

Weekly: 1 syringe

8 weeks: 8 syringes

12 weeks: 12 syringes

16 weeks: 16 syringes

20 weeks: 20 syringes

Bacteriostatic water (10 mL vials): Approx. 3.0 mL required per vial for reconstitution. Use bacteriostatic water within 28 days after opening[9].

8 weeks (1 vial): 3 mL $\rightarrow$ 1 $\times$ 10 mL vial

12 weeks (1 vial): 3 mL $\rightarrow$ 1 $\times$ 10 mL vial

16 weeks (1 vial): 3 mL $\rightarrow$ 1 $\times$ 10 mL vial

20 weeks (2 vials): 6 mL $\rightarrow$ 1 $\times$ 10 mL vial

Alcohol swabs: 2 swabs per week.

8 weeks: 16 swabs

12 weeks: 24 swabs

16 weeks: 32 swabs

20 weeks: 40 swabs $\rightarrow$ recommended: 1 box $\times$ 100-count

V. Protocol Summary

Brief Summary:

Objective: Support chronic weight management, reduce appetite and improve metabolic parameters via GLP-1 receptor activation[1].

Timing: Once-weekly subcutaneous injection for 16-20+ weeks with gradual dose escalation.

Dose Range: Weekly doses of 250 mcg (0.25 mg) to 2400 mcg (2.4 mg), titrated every four weeks to improve tolerability.

Reconstitution: Reconstitute vials of different specifications separately with specified-volume diluent to achieve accurately measurable concentrations.

Storage: Lyophilized powder stored frozen at -20°C (-4°F); reconstituted solution refrigerated at $2-8^{\circ}\text{C}$ ($35.6-46.4^{\circ}\text{F}$), use within 28 days; avoid repeated freeze-thaw cycles.

VI. Dosing Protocol

Starting Dose: 250 mcg (0.25 mg) once-weekly for Weeks 1-4 to establish baseline tolerability.

Dose Escalation: 500 mcg (0.5 mg) once-weekly for Weeks 5-8.

Continued Escalation: 1000 mcg (1.0 mg) once-weekly for Weeks 9-12.

Continued Escalation: 1700 mcg (1.7 mg) once-weekly for Weeks 13-16.

Target Maintenance Dose: 2400 mcg (2.4 mg) once-weekly starting Week 17+.

Frequency: Once-weekly subcutaneous injection.

Injection Time: Fixed same day each week; rotate injection sites to minimise local irritation.

VII. Storage Instructions

Storage requirements vary by formulation. Peptide stability depends on sequence, concentration, pH, buffer, excipients, surface contact, agitation, temperature and lyophilisation conditions[7].

Research-Grade Formulations: Use stability-validation data specific to your exact formulation; do not apply generic expiry dates.

Handling Records: Document reconstitution date, storage temperature, light exposure, aseptic controls and any temperature deviations.

Commercial Finished Product: Follow product-specific prescribing information. Storage instructions for finished commercial Semaglutide injection must not be directly applied to individually reconstituted research-use vials.

VIII. Important Considerations

Practical points for consistency and safety.

Use a new sterile insulin syringe for every injection; dispose into an approved sharps container[11].

Systematically rotate injection sites (abdomen, thighs, upper arms) to reduce local irritation and prevent lipohypertrophy[10].

Inject slowly and steadily; wait several seconds before withdrawing the needle to ensure full dose delivery.

Inject on the same fixed weekday for consistency; if a dose is missed, administer as soon as possible within 5 days after the missed dose[4].

GLP-1 receptor agonists may produce gastrointestinal side-effects (nausea, vomiting); gradual dose escalation helps minimise these effects[1][3].

IX. Potential Benefits & Adverse-Effect Profile

Observations from clinical literature and regulatory approvals[1][3][5].

Potential Benefits

Substantial Weight Loss: In clinical trials, the weekly 2.4 mg dose produced average 10-15% body-weight reduction when combined with lifestyle modification[1][5].

Glycaemic Control: Improves glucose-dependent insulin secretion and suppresses glucagon release[3].

Appetite & Food-Intake Reduction: Mediated by central nervous-system GLP-1 receptor activation[1].

Cardiometabolic Benefits: Outcome trials demonstrate reduced risk of major adverse cardiovascular events[6].

Convenient Once-Weekly Dosing: Improves adherence compared with daily regimens[1].

Adverse Effects

Gastrointestinal Reactions (Most Common): Nausea, vomiting, diarrhoea, constipation, abdominal pain — generally mild-to-moderate and lessen with progressive dose titration[1][3].

Injection-Site Reactions: Redness, swelling or local irritation, usually mild and transient[11].

Hypoglycaemia Risk (when combined with insulin or sulphonylureas): Uncommon during Semaglutide monotherapy due to its glucose-dependent mechanism[3].

Rare Serious Adverse Events: Pancreatitis, gallbladder disease, acute kidney injury; thyroid C-cell tumours observed in rodent studies; human relevance remains undetermined[4].

X. Injection Technique

General subcutaneous-injection guidance derived from clinical best-practice resources[10][11][12].

Wipe vial rubber stopper and selected skin site with separate alcohol swabs; allow both to air-dry completely before proceeding[11].

Pinch up a skin fold; insert needle at a 45-90° angle into subcutaneous fatty tissue (not muscle)[10][12].

Aspiration is not required for subcutaneous injection[10].

Inject solution slowly and steadily; wait at least six seconds after completing injection before withdrawing the needle to ensure full delivery and minimise leakage.

Withdraw needle, apply gentle pressure with clean cotton swab; do not rub.

Systematically rotate injection sites (abdomen, thighs, upper arms) with every injection to prevent lipohypertrophy and maintain consistent absorption[11]. The abdomen is the preferred site for most consistent absorption.

Immediately dispose of used syringe and needle into an approved sharps container[12].

Important Disclaimer: This document serves educational purposes only and does not constitute medical advice, diagnosis or treatment. Semaglutide is a prescription- only medicine in many jurisdictions. This protocol is for educational reference only. Always consult a qualified healthcare- provider before commencing any peptide- based protocol. Individual responses may vary; appropriate medical supervision is essential for safety- and- efficacy monitoring.