

# MOTS-c Therapy

A patient guide to MOTS-c, a mitochondrial peptide — subcutaneous (under-the-skin) self-injection

This guide is for patients who have been **prescribed MOTS-c by a Rebel Med NW physician** as part of an individualized metabolic-health plan. It explains what MOTS-c is, what the research does and does not show, its potential benefits and risks, how it's commonly dosed, and how to inject it safely. It does not replace your physician's instructions.

## ⚠ Read this first — important context

MOTS-c is **not an FDA-approved drug**, and its use for metabolic support is **investigational**. In July 2026, an FDA advisory committee voted to recommend adding MOTS-c to the list of substances pharmacies may compound — but **that was an advisory vote, not a drug approval or a final FDA decision**, and the regulatory status of compounded MOTS-c is still in transition. Compounded and research-grade peptides are **not reviewed by FDA for safety, effectiveness, or quality before marketing**. Use MOTS-c **only as prescribed to you, under our supervision** — do not share it, buy product from online "research" sellers, or change your dose on your own.

## What Is MOTS-c?

MOTS-c is a small peptide (16 amino acids) that your own cells make — remarkably, it's encoded inside your **mitochondrial DNA**, the tiny genome carried by your cells' energy factories. Discovered in 2015, it belongs to a new class of molecules called **mitochondrial-derived peptides**, which act as messengers between your mitochondria and the rest of the cell. Your body releases more MOTS-c during exercise, and circulating levels appear to change with age and metabolic health — which is why researchers describe it as a potential **"exercise-mimetic"** signal. The prescribed form is a synthetic copy given by **subcutaneous injection**.

## How It's Thought to Work

In cell and animal studies, MOTS-c activates **AMPK** — the cell's master "energy sensor," the same pathway switched on by exercise and by metformin. Through this pathway it appears to improve how cells take up and burn glucose, increase fat oxidation, and improve metabolic flexibility. Under stress, MOTS-c can even travel to the cell nucleus and adjust genes involved in antioxidant defense. *These mechanisms come from laboratory and animal research — human target engagement has not been established.*

## What the Research Shows — Honestly

Evidence  
type

What exists for MOTS-c

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Human clinical trials</b>    | <b>No published human trials of MOTS-c itself.</b> Human data are limited to observational studies of naturally circulating MOTS-c (levels differ in diabetes, obesity, and with exercise — association, not proof of benefit) and one small Phase 1 study of a <i>modified analog</i> (CB4211) in fatty liver/obesity, which was well tolerated and showed modest improvements in liver enzymes and glucose. A first Phase 2a trial of MOTS-c in prediabetes began in 2026 — results are not yet available. |
| <b>Animal &amp; lab studies</b> | Strong and interesting — improved insulin sensitivity and prevention of diet-induced obesity in mice; in one notable study, aged mice given MOTS-c roughly <b>doubled their running capacity</b> .                                                                                                                                                                                                                                                                                                           |
| <b>Bottom line</b>              | MOTS-c is <b>promising but unproven</b> . Mouse metabolism is not human metabolism; no controlled human trial has yet shown MOTS-c improves insulin sensitivity, body composition, or performance in people — and long-term human safety data do not exist.                                                                                                                                                                                                                                                  |

## Potential Benefits

Based on its mechanism and animal data, the hoped-for — *not guaranteed* — benefits include support for:

- **Insulin sensitivity and glucose metabolism** — the main reason we consider it, usually alongside nutrition, strength training, and other metabolic therapies.
- **Metabolic flexibility and fat metabolism.**
- **Exercise capacity and healthy aging** — based largely on the aged-mouse data.

**Honest expectations:** This is a **theory-driven, investigational therapy**. MOTS-c is a signal your body already makes when you exercise — it supports the fundamentals, it does not replace them. Nutrition, movement, sleep, and muscle remain the foundation; we'll reassess together based on your labs and how you feel.

## Who Should NOT Use MOTS-c

**Do not use MOTS-c, and tell your provider, if any of these apply:**

- **Pregnancy or breastfeeding** — there are no safety data; do not use.
- **Known allergy** to MOTS-c or any ingredient in the formulation.
- **Insulin or blood-sugar-lowering medications** (insulin, sulfonylureas) — tell us first; because MOTS-c targets glucose metabolism, there is a theoretical risk of low blood sugar when combined. We may adjust monitoring.
- **Active cancer or cancer history** — effects on tumor metabolism are unknown; discuss with your physician.

### Athletes & service members

MOTS-c is **explicitly named on the World Anti-Doping Agency Prohibited List** (S4.4, AMPK activators) — **prohibited at all times**, in and out of competition. If you compete in tested sport at any level, do not use MOTS-c. Check **GlobalDRO.com** or ask us.

## Possible Side Effects

Because controlled human studies of MOTS-c haven't been completed, the true side-effect profile is **not fully known**. Reported effects — from the analog study, clinical experience, and anecdote — include:

- **Injection-site reactions** — redness, swelling, itching, or mild pain (most common).
- Occasional reports of palpitations, insomnia, or jitteriness.
- Theoretical **low blood sugar** when combined with glucose-lowering medications — know the signs (shakiness, sweating, confusion, rapid heartbeat) and treat with fast-acting carbohydrate.
- Unknown long-term risks. Report anything unusual, even if it seems minor.

### When to stop and call us

Stop and contact your provider (or seek urgent care for severe symptoms) for signs of an allergic reaction — **trouble breathing, swelling of the face/lips/throat, hives** — severe or repeated low-blood-sugar symptoms, signs of infection at an injection site, or any reaction that worries you. **Call 911 for any emergency.**

## Dosing

Your physician will prescribe your exact dose and duration. There is **no scientifically validated human dose** of MOTS-c — the ranges below reflect common clinical practice, not controlled trial data:

| Schedule        | Commonly used range       | Notes                                                                      |
|-----------------|---------------------------|----------------------------------------------------------------------------|
| <b>Standard</b> | 5–10 mg SC, 2–3× per week | Often used in cycles (e.g., several weeks on, then off) with reassessment. |

**Important — how much to draw up or click:** Your dose is prescribed in **milligrams (mg)**, but you'll measure it in **units on an insulin syringe or clicks on a dosing pen** — and that conversion depends entirely on the concentration your pharmacy prepared. **Use the exact number of units or clicks your provider or pharmacy gives you — do not estimate or copy numbers from the internet.** If you're unsure, call us before injecting.

## How to Give a Subcutaneous Injection

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MOTS-c is injected into the fatty layer just under the skin using a small **insulin syringe** or dosing pen. If your MOTS-c came as a powder, your provider will show you how to reconstitute it (mix it with bacteriostatic water) — follow those specific instructions.

### You'll need

- Your MOTS-c vial or pen (refrigerated)
- A sterile insulin syringe (U-100) with a fine, short needle — or your pen needle
- Alcohol swabs and a sharps disposal container

### Step by step

- 1 **Wash your hands** thoroughly with soap and water.
- 2 **Inspect the vial or pen.** The liquid should be clear. Don't use it if it's cloudy, discolored, has particles, or is past its discard date.
- 3 **Clean the vial top** (or pen septum) with an alcohol swab and let it dry.
- 4 **Draw up or dial your exact prescribed dose** (units or clicks, as instructed). For a syringe: push air into the vial, draw liquid to your prescribed mark, and tap out air bubbles.
- 5 **Choose and clean your site.** The abdomen is ideal — at least 2 inches from your belly button — or the front of the thigh. Wipe with an alcohol swab and let it dry. *Rotate sites* each time.
- 6 **Pinch a fold of skin** gently between your thumb and finger.
- 7 **Insert the needle** all the way at a 45–90° angle in one smooth motion.
- 8 **Inject slowly**, then release the pinch.
- 9 **Withdraw the needle** and apply gentle pressure with clean gauze (don't rub). A tiny bit of bleeding is normal.
- 10 **Dispose** of the syringe or pen needle immediately in your sharps container — never recap or reuse. Wash your hands.

### Storage & sharps

- **Refrigerate** reconstituted MOTS-c (do not freeze), protect it from light, and use it within the timeframe your pharmacy specifies on the label.
- **Never reuse or share** needles, pens, or vials. Dispose of all needles in an approved **sharps container**.

## Monitoring & Follow-Up

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Metabolic therapy deserves metabolic monitoring. Depending on your plan, we may track **fasting glucose**, **HbA1c**, **insulin**, **lipids**, **body composition**, and your energy and exercise response — both to look for benefit and to catch problems early. Keep your scheduled visits, and call sooner if something concerns you.

## Questions?

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Your Rebel Med NW care team is here to help. If anything about your dose, schedule, or injections is unclear — or you're weighing whether this therapy is right for you — **call us before your next dose.**

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**Medical disclaimer:** This guide is educational, for patients prescribed MOTS-c by a Rebel Med NW physician; it is not medical advice for the general public and it does not recommend MOTS-c for any condition. **MOTS-c is not FDA-approved. No human trials of MOTS-c have been published, its long-term safety is unknown, and compounded peptides are not reviewed by FDA for safety, effectiveness, or quality.** The July 2026 FDA advisory committee recommendation was not an approval; regulatory status is evolving and current access rules remain unchanged until FDA acts. Benefits are not guaranteed and individual results vary. Always follow the specific instructions from your provider and pharmacy. Report suspected side effects to us, and — if you wish — to FDA MedWatch (1-800-FDA-1088 · [fda.gov/medwatch](https://www.fda.gov/medwatch)). In an emergency, call 911.

Key references: Lee C, et al. MOTS-c discovery and metabolic effects. *Cell Metab.* 2015;21(3):443–54. PMID 25738459. · Reynolds JC, et al. MOTS-c and physical capacity in aged mice. *Nat Commun.* 2021;12:470. PMID 33473109. · Kim KH, et al. MOTS-c nuclear stress response. *Cell Metab.* 2018;28(3):516–24. PMID 29983246. · CB4211 (MOTS-c analog) Phase 1a/1b topline results, CohBar, 2021. · Phase 2a MOTS-c trial in prediabetes, NCT07505745 (recruiting 2026; no results). · WADA Prohibited List 2026, S4.4. · FDA Pharmacy Compounding Advisory Committee meeting, July 23–24, 2026 ([fda.gov](https://www.fda.gov)). Educational summary only.