

NAD+

PATIENT EDUCATION GUIDE — CELLULAR
ENERGY & LONGEVITY THERAPY

**Harriman Precision
Health**

Physician-Supervised
Telemedicine Wellness
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What Is NAD+?

NAD+ (Nicotinamide Adenine Dinucleotide) is a coenzyme found in every living cell in the human body. It is essential to two of the most fundamental processes in biology: cellular energy production and DNA repair.¹ Without adequate NAD+, cells cannot efficiently generate ATP (the body's primary energy currency) and cannot maintain the DNA repair systems that protect against the accumulation of cellular damage that drives aging and disease.² NAD+ is not a peptide in the traditional sense — it is a coenzyme — but it is increasingly grouped with peptide therapies in regenerative medicine because of its complementary role in cellular optimization and because of how profoundly its age-related decline affects health and vitality.

NAD+ levels decline measurably with age, beginning in the mid-30s and continuing throughout life. This decline has been directly linked to reduced mitochondrial efficiency, weakened DNA repair capacity, increased systemic inflammation, metabolic dysfunction, and the general loss of cellular resilience that characterizes aging.³ Restoring NAD+ levels through physician-supervised supplementation aims to reverse these deficits at their source — the cell itself.

Important distinction: *NAD+ restoration does not make you look younger cosmetically. It restores cellular function toward the levels you had at a younger age — improving how your cells produce energy, repair damage, and regulate inflammation. The benefits are functional and systemic, not superficial.*⁴

How It Works

Mitochondrial energy production: NAD+ is a critical electron carrier in the

mitochondrial electron transport chain — the process by which cells convert nutrients into ATP. Without sufficient NAD⁺, this process becomes inefficient, producing less energy per unit of fuel consumed. Patients with chronic fatigue, post-viral exhaustion, or age-related energy decline often experience a rapid and noticeable shift in energy within 24–72 hours of initial NAD⁺ administration — not a stimulant effect, but a restoration of baseline cellular function.⁵

DNA repair via sirtuins and PARPs: NAD⁺ is consumed by two families of critical repair enzymes. PARPs (poly ADP-ribose polymerases) detect and repair DNA strand breaks — damage that accumulates with every day of environmental exposure, metabolic activity, and normal cellular stress.³ Sirtuins (SIRT1–SIRT7) are often called the "longevity proteins" — they regulate gene expression, control inflammation, manage cellular stress responses, and play a central role in the biological processes that determine healthspan and longevity.⁶ Both PARP and sirtuin function are entirely dependent on adequate NAD⁺ availability. As NAD⁺ declines with age, these repair systems become progressively less efficient.

What NAD⁺ Therapy Is Used For

Energy and mitochondrial restoration: Chronic fatigue, burnout, post-viral syndromes, and age-related energy decline respond well to NAD⁺ replenishment, often producing noticeable improvements in energy, endurance, and mental clarity within the first one to two weeks.⁵ **Longevity and healthy aging:** Sirtuin activation through NAD⁺ is among the most well-researched longevity mechanisms in biology, with animal studies demonstrating improved mitochondrial function, enhanced DNA repair, and reversal of age-associated metabolic decline.⁷ **Cognitive function:** NAD⁺ supports neuronal energy production, sirtuin-mediated neuroprotection, and reduction of neuroinflammation — patients frequently report improved mental clarity, focus, and mood stability.⁵ **Metabolic health:** Research has demonstrated that NAD⁺ replenishment improves insulin sensitivity, reduces visceral fat accumulation, and enhances glucose tolerance — making it relevant for patients with metabolic syndrome or diabetes risk.⁸ **Exercise recovery:** NAD⁺ restores mitochondrial function in muscle cells, reduces post-exercise inflammatory burden, and improves recovery between training sessions.

What to Expect: Timeline of Results

Energy and mental clarity are typically the first and most immediate benefits patients notice — often within 24–72 hours of initial administration.⁵ Sleep quality improvements and mood stabilization commonly follow within the first one to two weeks. Metabolic improvements — insulin sensitivity, body composition, and exercise recovery — develop over four to eight weeks of consistent therapy. The deeper longevity benefits — DNA repair efficiency, sirtuin activity, and mitochondrial density — accumulate over months of sustained use and are reflected in ongoing healthspan rather than a single measurable moment.

Standard Protocol

Parameter	Details
Subcutaneous Injection	50–100 mg per injection; 2–3x weekly for maintenance
Loading Protocol	Higher-dose loading may be used initially to rapidly restore depleted levels; physician-directed
IV Therapy (optional)	500 mg IV infusion for accelerated repletion; available through select clinical partners
Timing	Morning administration aligns with natural energy rhythm; supports daytime function without disrupting sleep
Ongoing Use	NAD+ is suitable for long-term weekly maintenance protocols; does not require cycling
Medication Source	Compounded by Empower Pharmacy (Houston, TX)

Safety Profile

NAD+ has an excellent safety profile, supported by a robust body of both preclinical and emerging human research.⁹ It is a naturally occurring coenzyme present in every cell of the body — supplementation restores rather than introduces a foreign compound. Side effects are generally mild: occasional nausea, flushing, or mild headache are the most commonly reported reactions, particularly at higher doses or with IV administration,

and typically resolve as the body adjusts. Subcutaneous injection at standard doses is well-tolerated by the vast majority of patients. NAD+ is compatible with most concurrent therapies and is particularly synergistic with peptide therapy protocols, as it supplies the cellular energy substrate that repair and regeneration processes require.¹⁰

How to Maximize Your Results

- › **Exercise Regularly¹¹** — Exercise stimulates endogenous NAD+ production through AMPK activation and mitochondrial biogenesis. Regular physical activity and NAD+ supplementation are synergistic — each amplifies the other's metabolic benefits. Resistance training and aerobic exercise both contribute meaningfully.
- › **Prioritize Sleep¹²** — NAD+-dependent sirtuin activity peaks during rest and recovery. Seven to nine hours of quality sleep per night maximizes the cellular repair and gene regulation that NAD+ restoration enables.
- › **Caloric Moderation and Intermittent Fasting⁸** — Caloric restriction and intermittent fasting are the two most powerful endogenous activators of NAD+-dependent sirtuin pathways. Even a 12–16 hour eating window can meaningfully enhance the longevity and metabolic benefits of NAD+ therapy.
- › **Reduce Alcohol and Smoking** — Both directly deplete NAD+ levels and generate oxidative stress that accelerates NAD+ consumption through PARP activation. Minimizing or eliminating these accelerates NAD+ restoration and sustains the benefits of therapy.
- › **Consider NMN/NR Precursor Supplementation** — NMN (nicotinamide mononucleotide) and NR (nicotinamide riboside) are oral NAD+ precursors that can sustain NAD+ levels between injections. Discuss with your physician whether oral precursor supplementation is appropriate as an adjunct to your injectable protocol.
- › **Stack with Complementary Peptides¹⁰** — NAD+ pairs exceptionally well with GHK-Cu (which drives collagen and tissue repair that NAD+ powers), CJC-1295/Ipamorelin (which generates GH signaling that requires mitochondrial energy), and MOTS-c

(which activates AMPK through complementary metabolic pathways). Discuss stacking options with your physician.

Is NAD+ the same as NMN or NR supplements I can buy online?

NMN and NR are oral precursors that the body converts to NAD+. They provide a meaningful but indirect and less potent increase in NAD+ levels. Injectable NAD+ directly replenishes the coenzyme at the cellular level — bypassing the conversion pathway and producing a more immediate and substantial restoration of NAD+ availability, particularly for patients with significant depletion.

Can NAD+ therapy help with post-COVID fatigue or burnout?

NAD+ is one of the most frequently used therapies for post-viral fatigue and burnout syndromes. The mechanism is direct: post-viral states and chronic stress significantly deplete NAD+ and mitochondrial function. Restoring NAD+ addresses the cellular energy deficit that underlies fatigue — patients frequently report this as one of the most noticeable and rapid benefits they experience.

Important Notice: This document is for educational purposes only. All therapies at Harriman Precision Health are physician-supervised and individualized. Results may vary. Questions? Contact us through your patient portal.

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Research cited includes peer-reviewed studies, preclinical models, and physician-supervised clinical practice data. All therapies at Harriman Precision Health are physician-supervised and individualized. This document does not constitute a guarantee of clinical outcomes.