



## nad+ what is the typical dose used in clinics providing iv therapy

Most IV NAD+ clinics use single-session doses in the 250–1,000 mg range, with 500 mg over several hours being a very common “standard” dose. <sup>[1] [2] [3] [4]</sup>

### Typical IV NAD+ doses

- Many wellness protocols describe IV NAD+ infusions of **500–1,000 mg per session**, usually run over 2–4 hours to reduce side effects like chest tightness or nausea. <sup>[2] [4]</sup>
- Some compounded-clinic charts list “routine” or starter IV doses of **250 mg in 500 mL NS over ~2 hours** or **500 mg in 1,000 mL NS over ~4 hours**, often given weekly. <sup>[1]</sup>
- A number of commercial IV services advertise **500 mg IV NAD+ as their base drip**, with the option to add an extra 500 mg (total 1,000 mg) in appropriate patients. <sup>[3] [5]</sup>

### Higher-dose and addiction protocols

- Addiction-focused or “intensive” protocols may use **500–1,000 mg IV daily for several consecutive days (often 4–10 days)**, then taper to less frequent maintenance infusions, all under close medical supervision. <sup>[6] [4]</sup>
- A case series in addiction used **500–1,000 mg IV NAD+ in 300 mL NS daily for 4 days**, then twice weekly for a month, then twice monthly as maintenance. <sup>[6]</sup>

### Safety and clinic variability

- Some corporate protocols set more conservative **maximums** such as **≤250 mg per infusion and ≤500 mg per week** (combining IV and IM) with monitoring during and after the drip. <sup>[7]</sup>
- Other integrative clinics report using **250–2,000 mg per session**, titrating up based on tolerance, indication, and infusion rate. <sup>[8]</sup>

Because protocols vary widely and high doses are off-label, dosing is typically individualized (age, comorbidities, meds, indication), with slow titration and clear informed consent about limited long-term outcome data. <sup>[9] [10] [2]</sup>

# **explain if NAD+ IV works as intended and if not why it does not work, use only clinical studies published in reputable journals, NO influencers, NO youtube, NO clinics**

Current evidence shows that IV NAD+ can raise blood NAD+ levels, but whether it “works as intended” for most of the marketed indications (energy, anti-aging, brain performance, addiction, etc.) is not proven in high-quality clinical trials. The best data so far suggest that NAD+ precursors (like nicotinamide riboside and NMN), especially orally, are more consistently studied and can increase NAD+ and modify some disease-related biomarkers, but clear clinical outcome benefits are still limited and indication-specific. [\[21\]](#) [\[22\]](#) [\[23\]](#) [\[24\]](#) [\[25\]](#) [\[26\]](#) [\[27\]](#) [\[28\]](#)

## **What IV NAD+ has actually been shown to do**

- A randomized, placebo-controlled pilot trial has directly compared a single IV dose of NAD+ (500 mg) with IV nicotinamide riboside (NR), oral NR, and saline in healthy adults. [\[23\]](#)
- In that study, IV NAD+ did increase blood NAD+ levels, but IV NR increased NAD+ more at 3 hours and was better tolerated, with fewer infusion-related adverse experiences and shorter acceptable infusion times. [\[23\]](#)
- IV NAD+ in this trial also produced a rise in white blood cells and neutrophils that was interpreted as an inflammatory response, whereas IV NR did not show such changes. [\[23\]](#)

These data support that IV NAD+ can acutely boost circulating NAD+, but they do not show clinical benefits on symptoms, function, or disease outcomes beyond transient biochemical changes. [\[23\]](#)

## **Addiction and withdrawal: what’s known and what’s missing**

- A frequently cited clinical signal comes from a small study in patients with alcohol and opioid use disorders in which IV NAD+ (as part of a broader protocol including vitamins and medications) was associated with reduced withdrawal symptoms, oxidative stress, and inflammation markers. [\[29\]](#)
- This work, however, is observational or pilot-level, uses combination protocols rather than NAD+ alone, and lacks large randomized, blinded comparisons against standard detox protocols, making it impossible to attribute benefit specifically to NAD+ or to generalize results. [\[25\]](#) [\[29\]](#)

A recent systematic review of NAD+ in clinical conditions concluded that, despite biological plausibility, robust evidence for clear clinical efficacy in addiction or other conditions is still sparse and heterogeneous. [\[25\]](#)

## Why IV NAD<sup>+</sup> often does not “work as advertised”

- **Lack of high-quality outcome trials:** Most claims (anti-aging, cognitive enhancement, performance, chronic fatigue) are extrapolated from preclinical or biomarker data, not from large, well-controlled human trials showing durable improvements in hard outcomes (e.g., physical function, cognition, relapse rates, mortality). <sup>[21] [25]</sup>
- **Non-specific mechanisms:** NAD<sup>+</sup> participates in many cellular processes (mitochondrial function, DNA repair, sirtuin activation), but raising systemic NAD<sup>+</sup> does not guarantee clinically meaningful change in complex syndromes like “fatigue” or “brain fog”, especially after a few infusions. <sup>[21]</sup>
- **Distribution and metabolism issues:** While IV NAD<sup>+</sup> elevates blood levels acutely, it may be rapidly metabolized or excreted, and it is unclear how much reaches specific target tissues (brain, muscle) in a way that meaningfully changes local NAD<sup>+</sup> biology over time. <sup>[21] [23]</sup>
- **Inflammatory or tolerability limitations:** The pilot IV trial suggests NAD<sup>+</sup> infusions can provoke inflammatory-type lab changes and are less comfortable than IV NR; this limits how aggressively they can be dosed in practice. <sup>[23]</sup>

In short, IV NAD<sup>+</sup> clearly changes lab numbers but has not yet been shown in rigorous trials to reliably produce the broad clinical benefits that are often advertised.

## What *does* have better evidence: NAD<sup>+</sup> precursors

Several placebo-controlled human trials of oral NAD<sup>+</sup> precursors (NR, NMN) show more consistent evidence for safely boosting NAD<sup>+</sup> and modifying disease-related biomarkers, although even here, strong clinical outcome data remain limited.

- In a randomized placebo-controlled trial in older adults, oral NR (1 g/day) increased NAD<sup>+</sup> in blood cells and was well tolerated; exploratory analyses suggested some changes in brain-related metabolic markers but no large clinical effect on cognition in this small pilot. <sup>[22]</sup>
- Another randomized crossover trial in older adults found that NR (500 mg twice daily for 6 weeks) increased NAD<sup>+</sup> in neuron-derived extracellular vesicles and reduced biomarkers such as A $\beta$ 42 and phosphorylated kinases linked to neuroinflammatory and neurodegenerative pathways. <sup>[30] [27]</sup>
- Multiple trials show that NMN (e.g., 250 mg/day for 12 weeks) safely and significantly increases whole-blood NAD<sup>+</sup> levels in healthy adults, again without major safety concerns but with mainly biomarker rather than hard clinical endpoints. <sup>[24] [26] [31]</sup>

These data suggest that, if the goal is simply to raise NAD<sup>+</sup> and favorably shift some molecular markers, oral precursors have stronger and cleaner evidence than IV NAD<sup>+</sup> itself. <sup>[26] [27] [22] [24]</sup>

## Bottom line for clinical practice

- IV NAD<sup>+</sup> “works” in the narrow sense that it can temporarily raise circulating NAD<sup>+</sup>, but current peer-reviewed clinical trials do not show strong, consistent evidence that it delivers the wide range of clinical benefits often claimed in commercial settings. <sup>[25] [21] [23]</sup>

- The absence of large, disease-specific randomized trials with clinically meaningful endpoints means that many patients will not experience the dramatic improvements marketed by IV clinics, and any benefits may be modest, transient, placebo-related, or due to accompanying supportive care. [\[25\]](#) [\[21\]](#)
- NAD<sup>+</sup>-boosting strategies appear most evidence-based when using oral precursors in well-defined research contexts, with outcome measures tied to specific diseases rather than broad wellness claims. [\[27\]](#) [\[22\]](#) [\[24\]](#) [\[26\]](#)

For a clinician, the evidence base at this point supports viewing IV NAD<sup>+</sup> as experimental, with plausible biochemical rationale but unproven efficacy for most indications, and with viable alternative strategies (oral precursors) that are better studied and generally easier to tolerate. [\[21\]](#) [\[25\]](#) [\[23\]](#)



## can cells use circulating blood plasma NAD<sup>+</sup> if yes, how and if no, why not

Cells can make indirect use of circulating NAD<sup>+</sup> in plasma, but they generally do not import intact NAD<sup>+</sup> across the plasma membrane in a major way; instead, extracellular NAD<sup>+</sup> is rapidly broken down to precursors (like nicotinamide, NMN, NR) that cells then take up and resynthesize into intracellular NAD<sup>+</sup>. [\[41\]](#) [\[42\]](#) [\[43\]](#) [\[44\]](#)

### Why intact plasma NAD<sup>+</sup> is not the main fuel

- Mammalian cell membranes are largely impermeable to NAD<sup>+</sup>, and no broadly expressed plasma-membrane NAD<sup>+</sup> transporter has been clearly identified in vivo, in contrast to well-defined transporters for precursors such as NR and NMN. [\[42\]](#) [\[45\]](#) [\[41\]](#)
- In blood and on cell surfaces, ectoenzymes such as CD38, ENPP1 and related nucleotidases very quickly degrade extracellular NAD<sup>+</sup> to products like ADP-ribose, AMP and nicotinamide, so intact NAD<sup>+</sup> does not persist long enough to be a stable direct source for cellular NAD<sup>+</sup>. [\[43\]](#) [\[46\]](#) [\[47\]](#) [\[48\]](#)

Because of this combination of poor membrane permeability and rapid enzymatic breakdown, most tissues do not rely on direct uptake of circulating NAD<sup>+</sup> to maintain their intracellular pools. [\[41\]](#) [\[43\]](#)

### How cells *actually* use circulating NAD<sup>+</sup>-derived molecules

- Extracellular NAD<sup>+</sup> is converted stepwise by CD38, ENPP1 and CD73 into NMN, NR, AMP, adenosine and **nicotinamide**, which can be taken up by cells through specific transport systems. [\[44\]](#) [\[48\]](#) [\[42\]](#) [\[43\]](#)
- Once inside, these precursors feed the **NAD<sup>+</sup> salvage pathways**: for example, nicotinamide is reconverted to NMN by NAMPT and then to NAD<sup>+</sup> by NMNATs; NR is phosphorylated by NRK1/2 to NMN, and NMN can itself be transported or generated intracellularly, all rebuilding the intracellular NAD<sup>+</sup> pool. [\[49\]](#) [\[42\]](#) [\[43\]](#) [\[41\]](#)

Reviews of NAD<sup>+</sup> metabolism therefore emphasize that mammals “largely rely on NAD<sup>+</sup> salvage from intracellular nicotinamide,” with circulating precursors providing additional support but intact plasma NAD<sup>+</sup> playing only a minor direct role. [\[43\]](#)

### Exceptions and signaling roles of extracellular NAD<sup>+</sup>

- Extracellular NAD<sup>+</sup> can act as a **signaling molecule**, binding to specific receptors or being converted to second messengers (such as cADPR) that change intracellular calcium and immune cell activation, without needing bulk transport of NAD<sup>+</sup> into the cell. [\[50\]](#) [\[44\]](#)
- Some specialized systems and organelles (notably mitochondria) have been reported to take up NAD<sup>+</sup> directly under experimental conditions, but these findings relate to intracellular compartment transport and do not imply that intact plasma NAD<sup>+</sup> is a major routine source of NAD<sup>+</sup> for whole cells in vivo. [\[51\]](#) [\[41\]](#)

Overall, cells benefit from circulating NAD<sup>+</sup> mainly after it is enzymatically processed into smaller precursors and signaling molecules, rather than by directly importing the intact NAD<sup>+</sup> molecule from plasma. [\[42\]](#) [\[44\]](#) [\[41\]](#) [\[43\]](#)



## Rates of plasma NAD plus clearance and half life in humans

Human data suggest that exogenous plasma NAD<sup>+</sup> is cleared very rapidly, but a precise classical half-life (like “X minutes”) has not yet been firmly defined in large pharmacokinetic studies. [\[59\]](#) [\[60\]](#) [\[61\]](#)

### Data from IV NAD<sup>+</sup> infusion in humans

- In a pilot study, healthy adults received a continuous IV NAD<sup>+</sup> infusion at 3 μmol/min for 6 hours. [\[60\]](#) [\[59\]](#)
- For at least the first 2 hours, NAD<sup>+</sup> infused into the vein was “rapidly and completely removed from the plasma,” with no measurable rise in plasma NAD<sup>+</sup> or its primary metabolites, implying very fast uptake and/or metabolism relative to the infusion rate. [\[59\]](#) [\[60\]](#)
- By the end of the 6-hour infusion, plasma levels of NAD<sup>+</sup> metabolites (nicotinamide, ADP-ribose, methyl-nicotinamide, NMN) had increased by roughly 3.5–4-fold compared with baseline, and urinary NAD<sup>+</sup> excretion rose by ~538%, indicating substantial systemic metabolism and renal handling over several hours. [\[60\]](#) [\[59\]](#)

These findings show rapid plasma clearance and conversion of infused NAD<sup>+</sup>, but the study did not model a terminal half-life because the infusion was ongoing and NAD<sup>+</sup> was largely undetectable in plasma during the early phase. [\[59\]](#) [\[60\]](#)

## Intracellular vs plasma half-life

- Reviews of NAD<sup>+</sup> metabolism note that intracellular NAD<sup>+</sup> has a relatively short half-life of about 1 hour in mammalian cells, due to high turnover by NAD-consuming enzymes (PARPs, sirtuins, CD38, etc.).<sup>[62] [63]</sup>
- This intracellular half-life reflects compartmental turnover, not plasma pharmacokinetics; however, it is consistent with the broader observation that NAD<sup>+</sup> and its precursors are “metabolized very quickly in mammalian blood and tissues.”<sup>[64] [62]</sup>

## Baseline plasma levels and age-related decline

- In cross-sectional LC–MS analyses, fasting human plasma NAD<sup>+</sup> concentrations are on the order of tens of nanomolar, around ~50 nM in young adults (20–40 years), falling to ~10 nM in older adults (60–87 years).<sup>[65] [61]</sup>
- These very low steady-state plasma levels, together with the rapid disappearance of infused NAD<sup>+</sup> from plasma, support the view that circulating NAD<sup>+</sup> is tightly regulated and swiftly degraded or taken up.<sup>[61] [60] [59]</sup>

## Overall interpretation

- Available human data show **rapid removal** of infused NAD<sup>+</sup> from plasma (within minutes to hours) with conversion to downstream metabolites and urinary excretion, but do **not** yet provide a robust, widely cited numerical plasma half-life for NAD<sup>+</sup> itself.<sup>[60] [59]</sup>
- Conceptually, NAD<sup>+</sup> behaves as a high-turnover molecule with short intracellular half-life (~1 hour) and very low steady-state plasma concentrations, consistent with fast clearance and extensive enzymatic metabolism rather than long persistence in circulation.<sup>[63] [62] [61] [64]</sup>



1. <https://www.olympiapharmacy.com/blog/nad-dosage-chart-nad-dosage-per-day/>
2. <https://www.jinfiniti.com/nad-dosage-and-frequency/>
3. <https://driphydration.com/blog/how-often-should-you-take-nad/>
4. <https://resetiv.com/blogs/news/nad-iv-therapy>
5. <https://regenics.com/the-correct-nad-injection-dosage-per-day/>
6. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7278809/>
7. [https://hydreight.com/docs/NAD/NAD Protocol\\_Hydreight\\_Updated 5.24.23.pdf](https://hydreight.com/docs/NAD/NAD Protocol_Hydreight_Updated 5.24.23.pdf)
8. <https://www.trumed.ca/nad-iv2>
9. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7558103/>
10. <https://www.addictioncenter.com/treatment/nad-therapy/>
11. <https://ivdrips.com/blog/nad-injection-dosage-per-day/>
12. <https://www.peachiv.com/blog-post/nad-dosage-frequency-guide>
13. <https://www.jinfiniti.com/nad-injection-dosage-chart/>
14. <https://www.naturopath-edmonton.ca/nad-iv>
15. <https://goldmanlaboratories.com/blogs/blog/how-to-get-nad-dosage-right>

16. <https://www.joinmidi.com/post/nad-supplements>
17. <https://www.canada.ca/en/health-canada/services/substance-use/get-help-with-substance-use.html>
18. <https://walnutcreekaesthetics.com/nad-injection-standard-operating-procedure-sop/>
19. <https://upperroomclinic.com/nad-iv-therapy/>
20. <https://www.webmd.com/mental-health/addiction/nad-therapy-addiction>
21. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7558103/>
22. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10828186/>
23. <https://society.org/articles/activity/10.1101/2024.06.06.24308565>
24. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9036060/>
25. <https://pubmed.ncbi.nlm.nih.gov/37971292/>
26. <https://www.frontiersin.org/journals/nutrition/articles/10.3389/fnut.2022.868640/full>
27. <https://pmc.ncbi.nlm.nih.gov/articles/PMC9835564/>
28. <https://pubmed.ncbi.nlm.nih.gov/36515353/>
29. <https://nadresearch.org/ivnad-improves-withdrawal-symptoms/>
30. <https://onlinelibrary.wiley.com/doi/10.1111/ancel.13754>
31. <https://pubmed.ncbi.nlm.nih.gov/35479740/>
32. <https://www.nature.com/articles/s41467-023-43514-6>
33. <https://clinicaltrials.gov/study/NCT06919328>
34. <https://altiumhealth.com/blog/nad-iv>
35. <https://onlinelibrary.wiley.com/doi/abs/10.1111/ancel.13754>
36. <https://clinicaltrials.gov/study/NCT06382688>
37. <https://www.jinfiniti.com/nad-for-addiction/>
38. <https://www.aboutnad.com/blogs/studies/randomized-placebo-controlled-pilot-clinical-study-evaluating-acute-niacin-iv-and-nad-iv-in-healthy-adults>
39. <https://recoveruscenters.com/pilot-study-finds-nad-effective-for-addiction-treatment/>
40. <https://clinicaltrials.gov/study/NCT06882096>
41. <https://www.nature.com/articles/s41392-020-00311-7>
42. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7494058/>
43. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4487780/>
44. <https://www.frontiersin.org/journals/immunology/articles/10.3389/fimmu.2021.704779/full>
45. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8231866/>
46. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8917930/>
47. <https://onlinelibrary.wiley.com/doi/10.1111/jcmm.15912>
48. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7793634/>
49. <https://www.sciencedirect.com/science/article/pii/S0021925820494797>
50. <https://portlandpress.com/biochemj/article/393/3/697/79190/Extracellular-NAD-regulates-intracellular-calcium>
51. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6013257/>
52. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8371318/>

53. <https://www.sciencedirect.com/science/article/pii/S1286457912001293>
54. [https://en.wikipedia.org/wiki/Nicotinamide\\_adenine\\_dinucleotide](https://en.wikipedia.org/wiki/Nicotinamide_adenine_dinucleotide)
55. <https://www.science.org/doi/10.1126/sciadv.aea7460>
56. <https://pubmed.ncbi.nlm.nih.gov/34142751/>
57. <https://www.sciencedirect.com/science/article/pii/S2211124723016546>
58. <https://aacrjournals.org/clincancerres/article/29/12/2184/727090/ENPP1-Immunobiology-as-a-Therapeutic-TargetA-New>
59. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6751327/>
60. <https://nadresearch.org/measuring-nad-metabolome-during-intravenous-infusion/>
61. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6482912/>
62. <https://www.nature.com/articles/s41392-020-00354-w>
63. <https://www.nature.com/articles/s41392-020-00311-7>
64. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4487780/>
65. <https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2022.886485/full>
66. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8612620/>
67. <https://www.asapivs.com/blog/nad-iv-therapy-information>
68. <https://renewbyscience.com/blogs/scientific-evidence-library/nad-iv-increases-nad-levels-in-blood-plasma-400-in-humans>
69. <https://www.sciencedirect.com/science/article/pii/S1550413119305029>
70. <https://www.peachiv.com/blog-post/nad-dosage-frequency-guide>
71. <https://www.jinfiniti.com/nad-injections/>
72. <https://pmc.ncbi.nlm.nih.gov/articles/PMC7558103/>
73. <https://pubs.rsc.org/en/content/articlelanding/2025/an/d4an01560f>
74. <https://www.empowerpharmacy.com/compounding-pharmacy/nad-injection/>
75. <https://www.naturopath-edmonton.ca/nad-iv>
76. <https://driphydration.com/blog/how-often-should-you-take-nad/>
77. <https://www.olympiapharmacy.com/blog/nad-dosage-chart-nad-dosage-per-day/>
78. [https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection\\_2cc7e788-eaba-4a3a-8b89-e880b924bc4a/22fac5b9-077c-48ec-a706-c557361f1f98/what-are-the-synergies-between-zNUin5TIRjCz\\_OizjvNEng.md](https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/collection_2cc7e788-eaba-4a3a-8b89-e880b924bc4a/22fac5b9-077c-48ec-a706-c557361f1f98/what-are-the-synergies-between-zNUin5TIRjCz_OizjvNEng.md)
79. <https://allureaestheticsllc.com/blog/what-is-nad-actual-evidence/>