



**Defense Health Agency (DHA) Clinical Communities Speaker Series**  
**FEB 2023 CCSS: Exploring Evidence-Based Practices in Women's and Infants' Health**

**S02: Nicotinamide Adenine Dinucleotide (NAD) Augmentation as a Gerotherapeutic Approach to Prevent and Treat Age-Related Diseases**

**Resource List**

One of the biggest financial strains on our health care system is chronic disease management. Geroscience approaches endeavor to delay the onset and progression of several chronic conditions by addressing fundamental biological pathways of aging. The article [Geroscience-guided repurposing of FDA-approved drugs to target aging: A proposed process and prioritization](#) (2022) discusses how this approach can improve overall health and function for aging adults, more effectively than disease management. The article also discusses the complications in establishing new interventions within current clinical care practice, which has potentially stifled the growth of this new realm of patient care. The authors of the article propose a new process for standardizing evaluation of FDA-approved medication for their effectiveness in geroscience.

[New horizons in life extension, healthspan extension and exceptional longevity](#) (2022) explores the opportunities for growth of this new study of geroscience. Gerotherapeutic drugs are those that target pathways involved in ageing, with the aims of reducing the risk for age-related chronic diseases and syndromes. The goal is to increase lifespan and healthspan. The exploration in the use of medications to treat ageing must be approached in a similar way that drugs for diseases are discovered. Repurposing current drugs for other indications or identifying new compounds that act on receptors or pathways will be key. Another approach involves studying populations with exceptional longevity, to identify genes variants linked with longer lifespan, that can then be targeted by drugs. Metformin, rapamycin and precursors of nicotinamide adenine dinucleotide are amongst the frontrunners of gerotherapeutics, that will be moving into human clinical trials to determine their effects on ageing.

The authors of [Nicotinamide adenine dinucleotide: Biosynthesis, consumption and therapeutic role in cardiac disease](#) (2020) explore the latest understanding of the different nicotinamide adenine dinucleotide (NAD) biosynthesis pathways. NAD is an abundant cofactor that plays crucial roles in several cellular processes. NAD can be synthesized through various methods. NAD participates in a wide range of reactions including regulation of cellular redox status, energy metabolism and mitochondrial biogenesis. The heart has the highest NAD levels and is one of the most metabolically demanding organs, given the large number of mitochondria present in cardiac tissue. Emerging evidence suggests that regulating NAD homeostasis by NAD precursor supplementation has therapeutic efficiency in improving myocardial bioenergetics and function.



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### References

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