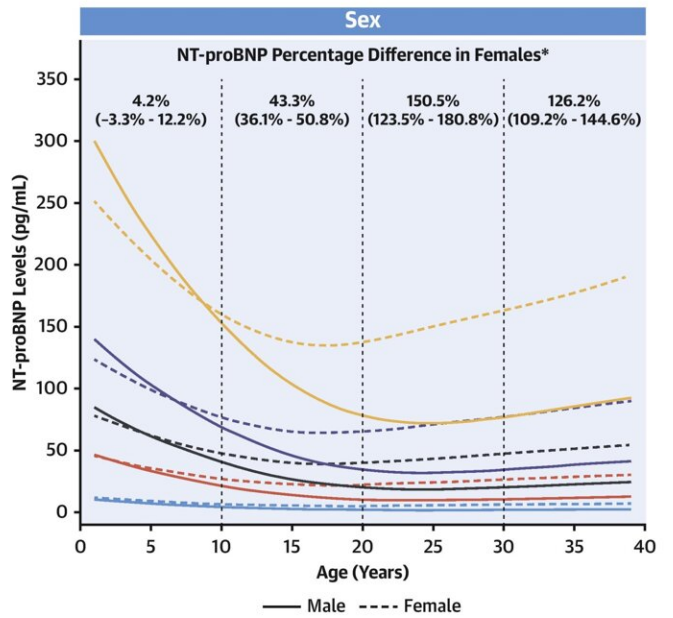


# **Researchers define normal natriuretic peptide level range across lifespan of healthy US population**

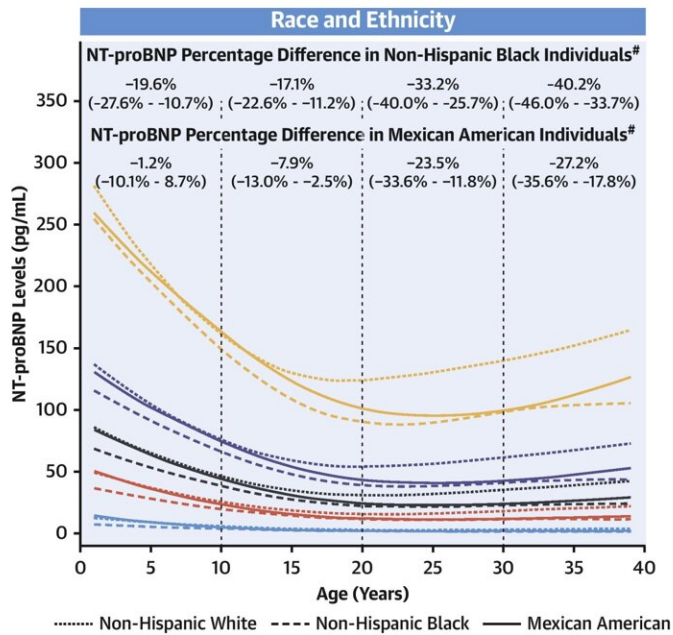
October 10 2023, by Anna Jones

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### CENTRAL ILLUSTRATION: Age-Specific NT-proBNP Concentrations Stratified by Age and Race and Ethnicity



\*Compared with Males  
NT-proBNP: N-Terminal Pro-B-Type Natriuretic Peptide



#Compared with Non-Hispanic White Individuals  
NT-proBNP: N-Terminal Pro-B-Type Natriuretic Peptide  
Percentile — 2.5<sup>th</sup> — 25<sup>th</sup> — 50<sup>th</sup> — 75<sup>th</sup> — 97.5<sup>th</sup>

Shetty NS, et al. J Am Coll Cardiol HF. 2023;■(■):■-■.

Age-specific NT-proBNP concentrations stratified by age and race and ethnicity.  
Credit: *JACC: Heart Failure* (2023). DOI: 10.1016/j.jchf.2023.07.018

Natriuretic peptides are hormones with a range of key functions vital for regulating cardiometabolic health, including regulating blood pressure, blood sugar levels, and increasing utilization of lipids and metabolism. However, the reference ranges of NPs and the prevalence of NP deficiency in the United States population have not been clearly defined.

Physician-scientists at the University of Alabama at Birmingham Marnix E. Heersink School of Medicine used population-level data to define the reference range of NPs and the threshold for NP deficiency in [a recent study](#) published in the *JACC: Heart Failure*.

NP levels are gold-standard markers that are used in diagnosing and predicting heart failure, but they also regulate a range of important functions, such as regulating blood pressure, [blood sugar levels](#) and lipid metabolism in healthy individuals. Low levels of NPs may disrupt these bodily functions and increase the risk of cardiometabolic disease, including heart attack, stroke, diabetes and hyperlipidemia.

While the awareness of the role NPs play in the development of cardiometabolic diseases is increasing, the reference range for how many NPs the body needs has not been determined across age ranges.

"In our previous research, we have found that NP levels are influenced by age, sex and race," said Naman Shetty, M.D., a research fellow in the UAB Division of Cardiovascular Disease and first author of the study. "NP levels are known to increase with age. Males and Black individuals have lower NP levels compared with their counterparts. Therefore, the team of researchers generated reference ranges for NP levels accounting

for all these factors."

The research team utilized the National Health and Nutrition Examination Survey—a national survey carried out by the Centers for Disease Control and Prevention—to generate nationwide estimates of the NP levels of approximately 230.4 million U.S. adults.

"We found that NP levels were high during childhood and reduced to their lowest levels in the 20–30 years age group, after which the levels continued to increase with age," Shetty said. "We also found that females had 90% higher NP levels than did males. While NP levels were similar by sex during childhood, the differences in NP levels among sex first appeared in the 10–20 years age group."

Shetty says this finding could implicate the role of sex hormones in regulating the levels of natriuretic peptides.

"Our previous research shows that NP levels are lower in Black individuals," said Pankaj Arora, M.D., the senior author of the manuscript and an associate professor in the UAB Division of Cardiovascular Disease. "Concordant with our previous studies, this study notes that NP levels were approximately 30% lower in Black individuals compared with white individuals. Black individuals also had approximately 20% lower natriuretic peptide levels beginning from childhood compared to white individuals. This supports a [genetic basis](#) for lower NP levels in Black individuals."

This is the first study to analyze the NP levels of Hispanic individuals. Researchers found that NP levels in Hispanic individuals were higher than in Black individuals and lower than in white individuals.

"The most noteworthy aspect of the study was the establishment of a threshold for NP deficiency," Arora said. "The study found that an

estimated 9.1 million individuals in the United States have an NP deficiency. NP-deficient individuals were found to be at a 40% higher risk of developing cardiometabolic diseases such as high [blood pressure](#), diabetes, hyperlipidemia and obesity. Considering that Black individuals have lower NP levels, NP deficiency may explain the higher prevalence of cardiometabolic diseases in Black individuals."

Arora says the establishment of the threshold for NP deficiency may facilitate the identification of individuals at a high risk of cardiometabolic disease and permit preventive strategies for these individuals. The study highlights the role of NPs as physiologically active hormones and the need to develop targeted therapeutic agents that increase natriuretic peptide levels.

To advance the comprehension of the therapeutic potential of the NP system, Arora has taken the lead in three precision medicine–based [clinical trials](#) conducted at UAB. These groundbreaking trials employ genetic criteria for participant recruitment, with the goals of identifying novel therapeutic targets that can elevate NP levels and evaluating the impact of such elevation on enhancing cardiometabolic health in populations at risk of low NP levels, notably among Black individuals. These trials are poised to establish a foundation for NP-augmentation therapies, with the overarching aim of mitigating racial disparities in cardiovascular disease.

**More information:** Naman S. Shetty et al, Natriuretic Peptide Normative Levels and Deficiency, *JACC: Heart Failure* (2023). [DOI: 10.1016/j.jchf.2023.07.018](https://doi.org/10.1016/j.jchf.2023.07.018)

Provided by University of Alabama at Birmingham

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