

BSH Position Statement: NT-proBNP cut-offs for Acute Heart Failure

The British Society for Heart Failure endorses the European Society for Cardiology Heart Failure Association clinical consensus statement recommending NT-proBNP age-related cut-offs for identification of acute heart failure in the emergency department.¹

A single cut-point of <300 ng/L NT-proBNP is considered to 'rule out' the diagnosis of acute heart failure regardless of the patient's age, and an alternative diagnosis should be sought.

For 'ruling in' acute heart failure, the following age-adjusted NT-proBNP cut-points indicate that HF is likely: ≥450ng/l for patients under 50 years, ≥900ng/l for patients aged 50–75 years, and ≥1800ng/l for patients over 75 years.^{2,3}

Age (years)	<50	50-75	>75
Acute Heart Failure likely if NT-proBNP (ng/L) is	>450	>900	>1800

If the NT-proBNP concentration is intermediate (above 300 ng/L but below acute heart failure levels), the diagnosis should be reconsidered. If after full reassessment, heart failure is still considered likely, an echocardiogram should be requested.

Notes:

1. The age-related NT-proBNP rule-in cut-offs have been extensively validated.^{2,3} The combined rule-in/rule-out cut-offs has been appraised by Health Technology Wales (HTW)⁴ which has published guidance supporting routine adoption in Emergency Departments in Wales.⁵ The combined rule-in/rule-out strategy has been shown to be cost effective and reduces unnecessary echocardiograms and hospital admissions.⁶
2. The units ng/L and pg/ml are interchangeable.
3. NT-proBNP levels are generally lower in obese patients and in young adults and higher in AF and advanced CKD.¹

¹ Bayes-Genis A, Docherty KF, Petrie MC et al. Practical algorithms for early diagnosis of heart failure and heart stress using NT-proBNP: A clinical consensus statement from the Heart Failure Association of the ESC. *European Journal of Heart Failure*. 2023 Nov;25(11):1891-8.

² Januzzi JL, van Kimmenade R, Lainchbury J, Bayes-Genis A et al. NT-proBNP testing for diagnosis and short-term prognosis in acute destabilized heart failure: An international pooled analysis of 1256 patients: The International Collaborative of NT-proBNP study. *Eur Heart J* 2006;27:330–337. <https://doi.org/10.1093/eurheartj/ehi631>

³ Januzzi JL, Chen-Tournoux AA, Christenson RH et al. N-terminal pro-B-type natriuretic peptide in the emergency department: the ICON-RELOADED study. *J Am Coll Cardiol.* 2018;71:1191–1200

⁴ NHS Wales. Cardiovascular Atlas of Variation. 2019. Available from: <https://collaborative.nhs.wales/networks/wales-cardiac-network/cardiac-network-documents-/cardiovascularatlasofvariation-march2019-pdf/>.

⁵ Health Technology Wales (HTW). Health Technology Wales (HTW) Guidance 026 (October 2021): natriuretic peptides to rule-in and rule-out a diagnosis of acute heart failure in adults in the emergency department setting. 2021. Available from: <https://healthtechnology.wales/wp-content/uploads/2021/11/GUI026-NTproBNP-and-BNP-Guidance.pdf>.

⁶ Walkley R, Allen AJ, Cowie MR et al. The cost-effectiveness of NT-proBNP for assessment of suspected acute heart failure in the emergency department. *ESC Heart Failure.* 2023;10:3276-86.