



# Age-dependent values of N-terminal pro-B-type natriuretic peptide are superior to a single cut-point for ruling out suspected systolic dysfunction in primary care<sup>†</sup>

**Per Hildebrandt<sup>1\*</sup>, Paul O. Collinson<sup>2,3</sup>, Robert N. Doughty<sup>4</sup>, Ahmet Fuat<sup>5</sup>, David C. Gaze<sup>2</sup>, Finn Gustafsson<sup>6</sup>, James Januzzi<sup>7</sup>, Jens Rosenberg<sup>8</sup>, Roxy Senior<sup>9</sup>, and Mark Richards<sup>10</sup>**

<sup>1</sup>Department of Cardiology and Medicine, Glostrup University Hospital, Glostrup, Denmark; <sup>2</sup>Department of Chemical Pathology, St George's Hospital, London, UK; <sup>3</sup>Department of Cardiology, St George's Hospital, London, UK; <sup>4</sup>Department of Medicine, Faculty of Medical and Health Sciences, The University of Auckland, Auckland, New Zealand; <sup>5</sup>Department of Cardiology, Darlington Memorial Hospital, Centre for Integrated Health Care Research, Durham University, Durham, UK; <sup>6</sup>Department of Cardiology, State

Downloaded from <https://academic.oup.com/ehj>

**Table 3** Receiver operating characteristic curves divided according to age and gender and for the pooled data

	n	AUC	95% CI
Age <50 years			
Pooled data	783	0.95	0.93–0.97
Male	439	0.95	0.93–0.98
Female	344	0.92	0.86–0.97
Age 50–75 years			
Pooled data	3668	0.90	0.88–0.91
Male	2045	0.89	0.88–0.91
Female	1623	0.90	0.87–0.93
Age >75 years			
Pooled data	1055	0.82	0.79–0.85
Male	456	0.83	0.79–0.87
Female	599	0.81	0.77–0.86

When used at appropriate cut-points, the very high sensitivity of NT-proBNP implies a very low risk of failing to exclude reduced left ventricular systolic function, an essential feature for a good initial test strategy. The use of natriuretic peptides must add to the standard evaluation and management of patients in this context. Thus, it is comforting to note that the use of NT-proBNP as a preliminary test in the primary care setting has been demonstrated to be cost-effective.<sup>18</sup> Using data from the Copenhagen echo lab,<sup>9</sup> testing patients with symptoms suggestive of heart failure with NT-proBNP and only doing echocardiography in patients with values above the decision limit value of 125 ng/L would be cost-effective and save 40–45% of echocardiographic procedures compared with a standard approach of imaging all patients. B-type natriuretic peptide/NT-proBNP has a very strong prognostic value in patients with known heart failure,<sup>19</sup> as well as in patients presenting to the GP with symptoms suggestive of heart failure.<sup>20</sup> This supports the use of an initial measurement of BNP/NT-proBNP in suspected heart failure as an increased value strongly indicates that further investigation is warranted, in order to find a potential reversible cardiac aetiology or to intensify treatment.

There are a number of potential pitfalls in using NT-proBNP for ruling out reduced left ventricular systolic function that clinicians

led from <https://academic.oup.com/eurheartj/article/31/15/1881/690841> by