| Table J-32. Risk of bias for prognostic studies using the Hayden Criteria for stable population assessing NT-proBNP  |
| --- |
|  | **Study****Participation** | **Study****Attrition** | **Prognostic Factors** | **Outcome****Measurement** | **Confounding** | **Analysis** | **Study****Design** |
| **Author, Year** | **1a** | **1b** | **1c** | **2a** | **2b** | **3a** | **3b** | **3c** | **3d** | **3e** | **4a** | **4b** | **4c** | **5a** | **5b** | **6a** | **7a** |
| Rothenburger,96 2004  | √ | √ | √ | X | ? | √ | √ | NA | √ | NA | √ | ? | √ | √ | √ | √ | √ |
| Gardner,97 2003.  | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| Gardner,98 2005 | √ | √ | √ | √ | √ | √ | √ | √ | ? | ? | √ | ? | √ | √ | √ | √ | √ |
| Hartmann,99 2004 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Corell,100 2007 | √ | √ | √ | √ | √ | √ | √ | √ | X | X | √ | √ | √ | X | X | √ | √ |
| Schou,101 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Guder,102 2007 | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Mikkelsen,103 2006 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Jankowska,104 2006 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Bruch,105 2006 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | X | X | X | √ | √ |
| Masson,106 2006 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Bruch,107 2006 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | X | X | X | √ | √ |
| Kistorp,108 2005 | √ | √ | √ | X | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| George,109 2005 | √ | √ | √ | ? | √ | ? | √ | √ | ? | ? | √ | ? | √ | ? | ? | √ | √ |
| George,110 2005 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Gardner,111 2005 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Gardner,112 2005 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Sherwood,113 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| Jankowska,114 2010 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | √ | √ | √ | √ |
| Codognotto,115 2010 | √ | √ | ? | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| Dini,116 2010 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | √ | √ |
| Berger,117 2010 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Tsutamoto,118 2010 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Nishiyama,119 2009 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | ? | ? | √ | X | X | √ | ? |
| Al Najjar,120 2009 | √ | √ | √ | √ | √ | √ | √ | √ | X | X | √ | ? | √ | √ | √ | √ | √ |
| Frankenstein,121 2009 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | X | √ | √ | √ | √ | √ |
| Cleland,122 2009 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |

| Table J-32. Risk of bias for prognostic studies using the Hayden Criteria for stable population assessing NT-proBNP (continued) |
| --- |
|  | **Study****Participation** | **Study****Attrition** | **Prognostic Factors** | **Outcome****Measurement** | **Confounding** | **Analysis** | **Study****Design** |
| Charach,123 2009 | √ | √ | √ | √ | √ | √ | √ | √ | ? | ? | √ | ? | √ | X | X | √ | √ |
| Zielinski,124 2009 | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ | √ | √ | X | X | X | √ | √ |
| Poletti,125 2008 | √ | √ | X | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Epelman,126 2009 | √ | √ | √ | √ | X | √ | √ | √ | √ | √ | √ | X | X | √ | √ | √ | √ |
| Dini,127 2009 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | X | X | X | √ | √ |
| Bayes-Genis,128 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Frankenstein,129 2009 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | X | √ | √ | √ | √ | √ |
| Kubanek,130 2009 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | ? | √ | √ | √ | √ | √ |
| Wedel,131 2009 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | ? | √ | √ | √ | √ | √ |
| Pfisterer,132 2009 | √ | √ | √ | √ | √ | √ | √ |  | √ | NA | √ | √ | √ | √ | √ | √ | √ |
| Koc,133 2009 | X | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | ? | X | √ | X | √ | √ |
| Michowitz,134 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | X | X | √ | √ |
| Honold,135 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | X | √ | √ |
| Tsutamoto,136 2008 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | ? | √ | X | X | √ | √ |
| Hinderliter,137 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Frankenstein,138 2008 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | X | √ | √ | √ | √ | √ |
| Kallistratos,139 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | X | X | √ | √ |
| Masson,140 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | X |
| Grewal,141 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | X | X | X | √ | √ |
| Bruch,142 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | ? | ? | √ | √ |
| Dini,143 2008 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | √ | √ | X | X | √ | √ |
| Amir,144 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Pascual-Figal,145 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | X | X | √ | √ |
| Moertl,146 2008 | √ | √ | √ | √ | X | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ |
| Koc,147 2008 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | X | √ | √ | √ | √ | √ |
| Pfister,148 2008 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | X | X | √ | √ |
| Gardner,149 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| Tsutamoto,150 2007 | √ | √ | √ | ? | ? | √ | √ | ? | ? | ? | ? | ? | √ | X | X | √ | √ |
| vonHaehling,151 2007 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | X | √ | √ | √ | √ | √ |
| Schou,152 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ |
| Frankenstein,153 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Kempf,154 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Michowitz,155 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | X | X | √ | ? |
| Bayes-Genis,156 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | X | X | √ | √ |
| Yin,157 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | X | X | √ | √ |
| Petretta,158 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | X | √ | √ |
| Tsutamoto,159 2007 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| MacGowan,160 2010 | √ | √ | ? | √ | √ | √ | √ | √ | √ | √ | √ | ? | X | ? | ? | √ | √ |
| Song,161 2010 | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | X | √ | √ | √ | √ |
| Jankowska,162 2010 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | X |
| Jankowska,163 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Tang,164 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | X | X | √ | X |
| Schierbeck,165 2011 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | X | √ | √ | √ | √ | √ |
| Raposeiras-Roubin,166 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| von Haehling,167 2010 | √ | √ | √ | X | √ | √ | √ | √ | √ | √ | √ | X | √ | √ | √ | √ | √ |
| van den Broek,168 2011 | √ | √ | √ | ? | ? | √ | √ | X | √ | √ | √ | X | √ | √ | √ | √ | √ |
| Kawahara,169 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | √ | √ | √ | √ |
| Pfister,170 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Frankenstein,171 2011 | √ | √ | √ | X | ? | √ | √ | √ | ? | ? | √ | X | √ | √ | √ | √ | √ |
| Bajraktari,172 2011 | √ | √ | √ | ? | √ | √ | √ | √ | √ | √ | √ | ? | X | X | X | √ | √ |
| Carlsen,173 2012 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | √ | √ | X | X | √ | √ |
| Broch,174 2012 | √ | √ | √ | ? | ? | √ | √ | √ | √ | √ | √ | √ | √ | ? | √ | u | √ |
| Tziakas,175 2012 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Bayes-Genis,176 2012 | ? | ? | ? | √ | √ | √ | √ | √ | ? | ? | √ | √ | √ | √ | √ | √ | √ |
| Franke,177 2011 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | √ | X | √ | √ | √ | √ |
| Jungbauer,178 2011 | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| Anand,179 2011 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | √ | √ | X | X | √ | √ |
| de Antonio,180 2012 | √ | √ | √ | √ | √ | √ | √ | √ | ? | ? | √ | √ | √ | √ | √ | √ | √ |
| Balling,181 2012 | √ | √ | √ | √ | √ | √ | √ |  | ? | ? | √ | √ | √ | √ | √ | √ | √ |
| Al-Najjar,182 2012 | √ | √ | √ | √ | √ | √ | √ | NA | √ | NA | √ | √ | √ | √ | √ | √ | √ |
| Christensen,183 2012 | √ | √ | √ | ? | ? | √ | √ | √ | ? | ? | √ | √ | √ | √ | √ | √ | √ |
| Moertl,93 2009 | √ | √ | √ | ? | ? | √ | √ | ? | √ | √ | √ | √ | √ | √ | √ | √ | √ |

1. a) source population clearly defined, b) study population described c) study population represents source population, or population of interest
2. a) completeness of follow-up described, b) completeness of follow-up adequate
3. a) BNP/NT-proBNP factors defined, b) BNP/NT-proBNP factors measured appropriately, c) Other factors measured appropriately, d) For BNP/NT-proBNP, the extent of and reasons for indeterminate test results or missing data reported, e) for other prognostic factors, the extent of and reasons for indeterminate test results or missing data reported
4. a) outcome defined, b) outcome measured appropriately, c) a composite outcome was avoided
5. a) confounders measured, b) confounders accounted for
6. a) analysis described
7. a) The study was designed to test the prognostic value of BNP/NT-proBNP