

# Preoperative tests (update)

## Routine preoperative tests for elective surgery

*NICE guideline NG45*

*Appendix K: Excluded clinical studies*

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**Disclaimer**

Healthcare professionals are expected to take NICE clinical guidelines fully into account when exercising their clinical judgement. However, the guidance does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of each patient, in consultation with the patient and, where appropriate, their guardian or carer.

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# Contents

Appendix K: Excluded clinical studies .....	5
References.....	15

## Appendix K: Excluded clinical studies

### K.1 Resting electrocardiography

**Table 1: Studies excluded from the clinical review**

Study	Exclusion reason
Bae 2014 <sup>35</sup>	Non-comparative study
Bohmer 2014 <sup>52</sup>	Inappropriate comparison
Bottiger 2004 <sup>56</sup>	Inappropriate comparison
Boyle 2003 <sup>57</sup>	Inappropriate comparison
Cavallini 2004 <sup>75</sup>	Battery of tests with composite outcomes
Chong 2013 <sup>81</sup>	Inappropriate comparison
Chung 2009 <sup>87</sup>	Battery of tests with composite outcomes
Elwood 2005 <sup>115</sup>	Inappropriate comparison
Ganapathi 2014 <sup>135</sup>	High proportion with non-elective surgery
Gonzalez 2003 <sup>143</sup>	Inappropriate comparison
Gupta 2009 <sup>148</sup>	Systematic review: study designs inappropriate
Hanss 2008 <sup>157</sup>	Inappropriate comparison
Ho 2007 <sup>166</sup>	Inappropriate comparison
Hobbs 2005 <sup>167</sup>	Inappropriate comparison
Hux 2003 <sup>173</sup>	Retrospective study, inappropriate comparison
Ivanovic 2014 <sup>177</sup>	Inappropriate comparison
Kertai 2003 <sup>193</sup>	Inappropriate comparison
Lee 2009 <sup>211</sup>	Observational study
Lim 2003 <sup>218</sup>	Inappropriate comparison
Lira 2001 <sup>220</sup>	Battery of tests with composite outcomes
Manninen 1990 <sup>227</sup>	Inappropriate comparison
Marx 1965 <sup>232</sup>	Case report
Mazel 1964 <sup>235</sup>	Narrative paper
McMartin 2014 <sup>240</sup>	Incorrect interventions
Nagele 2013 <sup>255</sup>	Inappropriate comparison
Nakano 1957 <sup>256</sup>	Inappropriate comparison
Nascimento 2004 <sup>257</sup>	Incorrect interventions
Nikolic 2008 <sup>260</sup>	Inappropriate comparison
Nze 2008 <sup>261</sup>	Inappropriate comparison
Ohrlander 2012 <sup>266</sup>	Battery of tests with composite outcomes
Pastore 2003 <sup>273</sup>	Inappropriate comparison
Persson 2005 <sup>275</sup>	Inappropriate comparison
Radovanovic 2008 <sup>280</sup>	Inappropriate comparison
Ramaswamy 2004 <sup>282</sup>	Inappropriate comparison
Sabate 2011 <sup>288</sup>	Inappropriate comparison
Shalwala 2015 <sup>300</sup>	Non-comparative study
Sharma 2014 <sup>301</sup>	Narrative review

Smith 2014 <sup>306</sup>	Inappropriate comparison
Troisi 2008 <sup>325</sup>	Inappropriate comparison
Wijeyesundera 2010 <sup>341</sup>	Inappropriate comparison
Yuan 2005 <sup>351</sup>	No extractable data

## K.2 Resting echocardiography

**Table 2: Studies excluded from the clinical review**

Study	Exclusion reason
Afilalo 2011 <sup>11</sup>	Cardiac surgery
Afilalo 2013 <sup>12</sup>	Non-comparative
Alibhai 2013 <sup>23</sup>	Outcomes not relevant
Botker 2013 <sup>55</sup>	Inappropriate comparison, non-comparative.
Canty 2009 <sup>66</sup>	Non-comparative, descriptive
Canty 2012 <sup>67</sup>	Non-comparative
Cavallari 2015 <sup>74</sup>	Outcomes not relevant
Chan 2011 <sup>76</sup>	Irrelevant outcomes
Cheitlin 2003 <sup>78</sup>	Not a study
Chilkoti 2015 <sup>79</sup>	Univariate analysis
Cho <sup>80</sup>	Prognostic study, superseded by interventional evidence
Cowie 2009 <sup>97</sup>	Inappropriate comparison, incorrect interventions, non-comparative
Cowie 2011 <sup>96</sup>	Non-comparative
Deshpande 2014 <sup>101</sup>	Unable to obtain paper
Fleisher 2007 <sup>130</sup>	Not a study
Guarracino 2014 <sup>147</sup>	No extractable data
Guryel 2004 <sup>150</sup>	Non-elective surgery population
Hartley 2011 <sup>158</sup>	Non-comparative
Kalogeropoulos 2014 <sup>191</sup>	Cardiac surgery
Krahn 2008 <sup>204</sup>	Non-comparative
Larsen 2009 <sup>210</sup>	Non-comparative
Loxdale 2010 <sup>221</sup>	Non-comparative
Loxdale 2012 <sup>222</sup>	Outcomes not relevant
Manoharan 2013 <sup>228</sup>	Non-comparative
Markin 2015 <sup>231</sup>	Outcomes not relevant
Mcbrien 2009 <sup>237</sup>	Non-comparative
Mcmartin 2014 <sup>241</sup>	Rapid review (non-UK: Canada)
Negoï 2013 <sup>258</sup>	Irrelevant outcomes/focus of systematic review
O'heireamhoin 2011 <sup>262</sup>	Not elective surgery
O'sullivan 2010 <sup>264</sup>	Non-comparative
Placanica 2011 <sup>276</sup>	Not echocardiography
Rando 2009 <sup>283</sup>	Transplant surgery
Rando 2011 <sup>284</sup>	Transplant surgery

Study	Exclusion reason
Robinson 2013 <sup>285</sup>	Incorrect interventions
Rohde 2001 <sup>286</sup>	Non-comparative
Roshanali 2012 <sup>287</sup>	Inappropriate outcomes
Selvakumar 2011 <sup>296</sup>	Inappropriate comparison
Selvaratnam 2013 <sup>297</sup>	Non-comparative
Smith 2014 <sup>307</sup>	Emergency surgery
Snaith 2010 <sup>309</sup>	Non-comparative
Snaith 2010 <sup>308</sup>	Non-comparative
Tan 2014 <sup>320</sup>	Transplant surgery
Tan 2015 <sup>321</sup>	No extractable data
Tsialtas 2014 <sup>326</sup>	Outcomes not relevant
Vijayan 2012 <sup>332</sup>	Inappropriate comparison
Visnjevac 2014 <sup>333</sup>	Univariate analysis
Vizza 2001 <sup>334</sup>	Non-comparative

## K.3 Cardiopulmonary exercise testing

### K.3.1 Intervention review

**Table 3: Studies excluded from the clinical review**

Reference	Reason for exclusion
Aalten 2011 <sup>2</sup>	Renal transplantation not included as a surgical type
Aftab 2014 <sup>13</sup>	No multivariable analysis for our prognostic factor
Agnew 2010 <sup>15</sup>	Narrative review. Listed as a study design exclusion in protocol.
Akhras 1984 <sup>19</sup>	Diagnostic accuracy of exercise testing
Albouaini 2007 <sup>21</sup>	Narrative review
Babu-Narayan 2014 <sup>32</sup>	Valve replacement not included as a surgical type
Balady 2010 <sup>36</sup>	Scientific statement
Beccaria 2001 <sup>41</sup>	Only a subgroup (7 patients) were referred for CPET
Bernal 2014 <sup>43</sup>	Transplantation surgery
Bernstein 2012 <sup>44</sup>	Narrative review. Listed as a study design exclusion in the protocol
Bill-Brahe 1980 <sup>46</sup>	Diagnostic accuracy
Brunelli 2014 <sup>58</sup>	Narrative summary
Brutsche 2000 <sup>59</sup>	No extractable data
Burnside 2014 <sup>64</sup>	Narrative summary. Listed as a study design exclusion in the protocol
Campione 2010 <sup>65</sup>	Non-comparative
Carliner 1985 <sup>68</sup>	No relevant preoperative test
Colson 2012 <sup>95</sup>	Outcomes measured at long-term (5 years follow-up). Protocol defines outcomes to be measured 30-day post-surgery

Reference	Reason for exclusion
Dales 1993 <sup>100</sup>	Study does not specify if CPET
Dunne 2014 <sup>106</sup>	No multivariable analysis for prognostic factors of interest
Epstein 2004 <sup>117</sup>	Transplantation surgery
Farid 2002 <sup>122</sup>	Not matching the protocol
Forshaw 2008 <sup>132</sup>	Non-comparative
Goodyear 2013 <sup>144</sup>	Non-comparative
Hennis 2011 <sup>161</sup>	Systematic review with a different review protocol
Hennis 2012 <sup>160</sup>	Diagnostic study
Hightower 2010 <sup>162</sup>	Diagnostic study
Horwich 2009 <sup>169</sup>	Patients not undergoing surgery
Hoyland 2014 <sup>170</sup>	Narrative review
Iorio 2013 <sup>175</sup>	Narrative review. Listed as a study design exclusion in protocol
Jack 2014 <sup>179</sup>	Outcome not directly linked to prognostic factor
James 2014 <sup>180</sup>	Non-comparative
Jones 2007 <sup>186</sup>	No multivariable analysis and no surgery
Jones 2010 <sup>187</sup>	Median length of follow-up 30.8 months. Protocol defines outcomes to be measured 30-days post-surgery
Kaibori 2013 <sup>190</sup>	Conference abstract only
Larsen 1997 <sup>209</sup>	Study does not specify CPET
Levett 2015a <sup>214</sup>	Narrative review
Metra 1999 <sup>245</sup>	Patients not undergoing surgery
Milani 2004 <sup>246</sup>	Narrative review
Nagamatsu 2001 <sup>253</sup>	Incorrect analysis/Data narrative prognostic review
Nagamatsu 2004 <sup>254</sup>	No extractable data
Okumura 2013 <sup>267</sup>	CPET not related to post-surgical outcomes
Older 1999 <sup>268</sup>	CPET values not related to post-surgical outcomes. Allocated to different post-operative location based on CPET score
Older 2000 <sup>269</sup>	Narrative review. Listed as a study design exclusion in protocol.
Ong 2000 <sup>270</sup>	Heart transplantation not included as a surgical type
Otto 2012 <sup>271</sup>	CPET was tested for different disease sufferers
Park 2005 <sup>272</sup>	Case series. Listed as a study design exclusion in protocol
Poldermans 2006 <sup>277</sup>	Stress testing rather than CPET
Singh 2013 <sup>303</sup>	Systematic review: surgery type not reported
Smith 2009 <sup>305</sup>	Systematic review with a different review protocol
Snowden 2013 <sup>310</sup>	Data could not be extracted
Stanzani 2014 <sup>312</sup>	Only a subgroup (8 patients) were referred for CPET
Struthers 2008 <sup>313</sup>	Comparison between different preoperative cardiorespiratory tests
Swart 2012 <sup>317</sup>	Data could not be extracted
Thompson 2011 <sup>324</sup>	Study was conducted with univariate analysis
Walsh 1994 <sup>335</sup>	Study does not specify if CPET
Watson 2009 <sup>338</sup>	CPET not included as preoperative test
West 2014 <sup>340</sup>	Univariate analysis



Reference	Reason for exclusion
Wilson 2010 <sup>342</sup>	Non-comparative
Young 2012 <sup>350</sup>	Systematic review with a different review protocol
Zoghbi 2003 <sup>354</sup>	Liver transplantation not included as a surgical type

## K.4 Polysomnography

**Table 4: Studies excluded from the clinical review**

Reference	Reason for exclusion
Acebo 1991 <sup>9</sup>	Not relevant to review questions
Aftab 2014 <sup>14</sup>	No outcomes included that match protocol
Aguiar 2014 <sup>16</sup>	No outcomes included that match protocol
Ahmad 2008 <sup>17</sup>	Univariate analysis
Annamalai 2013 <sup>27</sup>	Pre-surgery patients only
Anon 2010 <sup>1</sup>	Univariate analysis
Apostolidou 2012 <sup>28</sup>	Study focused on complications post cardiac surgery, excluded in our protocol
Auckley 2012 <sup>30</sup>	Literature review, screened for references
Baltzan 2000 <sup>37</sup>	Not relevant to review questions
Baugh 2013 <sup>40</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography (taken from insurance claim form)
Beebe 2013 <sup>42</sup>	Not relevant to review questions
Blake 2008 <sup>48</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography
Blankley 2009 <sup>49</sup>	No outcomes included that match protocol
Bryson 2010 <sup>62</sup>	Included grade 1 and 2 surgeries, and did not exclude cardiac surgery. Included patients who had potential previous diagnosis of obstructive sleep apnoea.
Burgess 1992 <sup>63</sup>	Technology and equipment review, not relevant to our protocol
Carneiro <sup>69</sup> 2012	No relevant outcomes
Cartagena 2005 <sup>71</sup>	No extractable data
Chong 2013 <sup>82</sup>	Univariate analysis
Chung 2007 <sup>90</sup>	Univariate analysis
Chung 2008 <sup>91</sup>	Systematic review, did not match protocol. Screened for references.
Chung 2008 <sup>86</sup>	Information in included paper Chung 2008 <sup>91</sup>
Chung 2014 <sup>89</sup>	No outcomes included that match protocol
Chung 2012 <sup>85</sup>	Study validating other screening tools, no results on surgical outcome
Chung 2015 <sup>88</sup>	No variance data
Esclamado 1989 <sup>118</sup>	Univariate analysis
Fleischman 2014 <sup>129</sup>	No relevant outcomes
Flink 2012 <sup>131</sup>	Included patients diagnosed with OSA by methods other than polysomnography and no separate analysis

Reference	Reason for exclusion
Finkel 2008 <sup>126</sup>	Univariate analysis
Goettal 2012 <sup>139</sup>	Not relevant to review questions
Gong 2011 <sup>142</sup>	Not in English language
Gupta 2001 <sup>149</sup>	Included patients with oximetry-diagnosed obstructive sleep apnoea
Haines 2007 <sup>151</sup>	Univariate analysis
Hallowell 2007 <sup>156</sup>	Univariate analysis
Hathaway 2006 <sup>159</sup>	Univariate analysis
Hwang 2009 <sup>174</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography
Istfan 2011 <sup>176</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography
Jarrell 1999 <sup>183</sup>	Literature review, screened for references
Joshi 2012 <sup>188</sup>	Literature review, screened for references
Kaw 2011	No confidence intervals
Kieff 2004 <sup>194</sup>	Univariate analysis and no polysomnography used
Kim 2005 <sup>196</sup>	Univariate analysis
Kostantinidis 2014 <sup>201</sup>	Not relevant to review questions
Liao 2009 <sup>216</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography
Lipford 2015 <sup>219</sup>	Unable to obtain paper
Mador 2013 <sup>225</sup>	Included cardiac surgery in intervention
Memtsoudis 2013 <sup>242</sup>	No polysomnography used
Meoli 2003 <sup>243</sup>	Not relevant to review questions
Mokleshi 2013 <sup>247</sup>	Obstructive sleep apnoea diagnosed via means other than polysomnography
Mutter 2014 <sup>252</sup>	Population indirect, not obese, and included patients who had polysomnography up to 5 years prior to surgery
Pollak 2004 <sup>278</sup>	Univariate analysis
Rahimi 2003 <sup>281</sup>	Univariate analysis
Sabers 2003 <sup>289</sup>	Included grade 1 and 2 surgeries, and did not exclude cardiac surgery
Sallet 2011 <sup>291</sup>	Not relevant to review questions
Selim 2014 <sup>295</sup>	Unable to obtain paper
Shafazand 2009 <sup>298</sup>	No extractable data
Smetana 2014 <sup>304</sup>	Unable to obtain paper
Sundar 2011 <sup>315</sup>	Literature review, screened for references

## K.5 Health technology assessment update: lung function tests, full blood count, and kidney function tests

**Table 5: Studies excluded from the clinical review**

Reference	Reason for exclusion
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Reference	Reason for exclusion
Abdelhamid et al. (2013) <sup>4</sup>	Univariate analysis
Abdelmalak 2013 <sup>5</sup>	Does not measure preoperative parameters, only perioperative
Abughanem 2014 <sup>8</sup>	Prognostic factor of interest used in a standardised threshold for blood transfusion
Ajimura 2005 <sup>18</sup>	Only descriptive, no analysis carried out
Alazzawi 2012 <sup>20</sup>	Univariate analysis
Ali 2012 <sup>22</sup>	Univariate analysis
Alsaleh 2013 <sup>24</sup>	Does not assess preoperative tests
Amrock 2014 <sup>26</sup>	Incorrect prognostic factor
Bachrach 2014 <sup>33</sup>	Incorrect analysis type
Badner 2010 <sup>34</sup>	Univariate analysis
Baron 2014 <sup>38</sup>	Elective surgery used as reference group so no data provided
Basora 2014 <sup>39</sup>	Intervention to optimise the HB prior to surgery
Billings 1993 <sup>47</sup>	Audit with univariate analysis
Boaz 2012 <sup>50</sup>	Univariate analysis
Brynmiarski 2013 <sup>60</sup>	Preoperative tests not linked to outcomes of interest
Bryson 2006 <sup>61</sup>	Univariate analysis
Carruthers 2012 <sup>70</sup>	Outcome related to cancer survival rather than surgery
Cattano 2010 <sup>72</sup>	Not a preoperative test as such
Chong 2011 <sup>83</sup>	Univariate analysis
Coakley 2012 <sup>92</sup>	Emergency surgery
Coan 2013 <sup>93</sup>	Preoperative tests do not match the protocol
Cohen 2014 <sup>94</sup>	No outcomes relevant to the protocol
Crapo 1986 <sup>98</sup>	Univariate analysis
Dajani 2009 <sup>99</sup>	Outcome unrelated to surgery
Dimkovic 2002 <sup>102</sup>	Dialysis rather than surgery
Dunham 2014 <sup>104</sup>	Only perioperative factors reported
Dunne 2002 <sup>107</sup>	Includes emergency surgery
Ebert 1997 <sup>108</sup>	RCT comparing 2 drugs, testing incidental
Elhenawy 2015 <sup>113</sup>	Protocol only
Elmistekawy 2013 <sup>114</sup>	Cardiac surgery
Farina 2012 <sup>123</sup>	Did not adjust for key confounders
Faintuch 2004 <sup>121</sup>	No outcomes relevant to the protocol
Finegan 2005 <sup>125</sup>	Preoperative tests ordered according to 'usual practice' compared to tests ordered by 'attending anaesthesiologist/ anaesthesiology resident' mean number of tests ordered did not differ between groups
Fischer 2012 <sup>127</sup>	Univariate analysis
Fischer 2014 <sup>128</sup>	Results not multivariate
Fujiwara 2010 <sup>133</sup>	Outcomes only related to perioperative changes, not preoperative values
Gallus 1973 <sup>134</sup>	Univariate analysis
Golub 1992 <sup>141</sup>	Univariate analysis

Reference	Reason for exclusion
Grigorakos 2008 <sup>146</sup>	Univariate analysis
Hill 2012 <sup>164</sup>	Univariate analysis
Huh 2013 <sup>172</sup>	Did not adjust for key confounders
Iwasaki 2009 <sup>178</sup>	No outcomes relevant to the protocol
Johansen 2013 <sup>184</sup>	Dialysis rather than surgery
Johnson 1988 <sup>185</sup>	Univariate analysis
Kaag 2014 <sup>189</sup>	Incorrect outcomes
Kaloglu 2014 <sup>192</sup>	Incorrect outcomes
Kamimura 2006	Post-surgical outcomes not reported
Kim 2015 <sup>195</sup>	Prognostic factor of interest not in multivariable analysis
Ku 2015 <sup>205</sup>	Outcome unrelated to surgery
Lee 2012 <sup>213</sup>	Post-operative anaemia
Li 2014 <sup>215</sup>	Incorrect outcomes
Licciardello 2014 <sup>217</sup>	Prognostic factor of interest not in multivariable analysis
Ma 2014 <sup>223</sup>	Prognostic factor of interest not in multivariable analysis
Macpherson 1990 <sup>224</sup>	Univariate analysis
Mantha 2005 <sup>229</sup>	Univariate analysis
Matsumoto 2014 <sup>234</sup>	Outcome unrelated to surgery
McAlister 2003 <sup>236</sup>	Study designed to identify who should have pulmonary function tests rather than at the time of surgery, that is, the preoperative effectiveness of these tests
McKee 1987 <sup>238</sup>	Univariate analysis
McKibbin 1996 <sup>239</sup>	Post-surgical outcomes not reported
Metindir 2009 <sup>244</sup>	Outcomes not relevant to the protocol
Montan 2015 <sup>248</sup>	Incorrect analysis type
Mooney 2013 <sup>249</sup>	Systematic review not matching our protocol
Moschini 2014 <sup>251</sup>	Outcome unrelated to surgery
Nascimento 2004 <sup>257</sup>	Univariate analysis
Ngo 2013 <sup>259</sup>	Outcome unrelated to surgery
Peng 2014 <sup>274</sup>	Incorrect prognostic factor
Potter 2015 <sup>279</sup>	Insufficient detail on included study methods
Ramaswamy 2004 <sup>282</sup>	Preoperative tests occurrence of diagnosis anaemia only, no inclusion of peri/post-operative complications
Sejima 2014 <sup>294</sup>	Incorrect outcome
Shalwala 2015 <sup>300</sup>	Outcome unrelated to surgery
Shen 2014 <sup>302</sup>	Incorrect prognostic factor
Szkandera 2014 <sup>319</sup>	Incorrect prognostic factor
Velanovich 1991 <sup>330</sup>	Any routine test and any type of surgery is investigated not just those in the HTA
Velanovich 1993 <sup>331</sup>	Effects of conditions (not only defined by test but also clinical features) on surgical outcomes rather than test
Walters 1997 <sup>336</sup>	Only descriptive data provided
Wang 2015 <sup>337</sup>	Outcome unrelated to surgery
Wattsman 1997 <sup>339</sup>	Univariate analysis

Reference	Reason for exclusion
Wittgen 1993 <sup>344</sup>	Univariate analysis
Wyatt 1989 <sup>346</sup>	Univariate analysis
Xiao 2014 <sup>347</sup>	Incorrect prognostic factor
Yang 2015 <sup>348</sup>	Outcome unrelated to surgery
You 2015 <sup>349</sup>	Outcome unrelated to surgery
Zhang 2014 <sup>353</sup>	Outcome unrelated to surgery
Zhang 2014 <sup>352</sup>	Incorrect prognostic factor

## K.6 Glycated haemoglobin test

### K.6.1 HbA1c in diabetes

**Table 6: Studies excluded from the clinical review (for both diagnosed [intervention & prognostic] and undiagnosed [intervention & prognostic] reviews)**

Reference	Reason for exclusion
Aarts 2013 <sup>3</sup>	Not matching the protocol
Abdelmalak 2011 <sup>6</sup>	Random blood glucose
Abdelmalak 2014 <sup>7</sup>	Random blood glucose
Acott 2009 <sup>10</sup>	Univariate analysis
Alsumait 2002 <sup>25</sup>	Not on HbA1c
Aragon-Sanchez 2011 <sup>29</sup>	Narrative description of data
Azafarin 2011 <sup>31</sup>	Cardiac surgery
Biery 1987 <sup>45</sup>	Post-surgical outcomes not reported
Boldt 1993 <sup>53</sup>	Cardiac surgery
Cavalcantilira 2002 <sup>73</sup>	Battery of tests
Chuah 2014 <sup>84</sup>	Not matching the protocol
Dunkelgrun 2008 <sup>105</sup>	Random blood glucose
Edelman 2010 <sup>109</sup>	Population not undergoing surgery
Egas 2011 <sup>110</sup>	Not matching the protocol
Ehara 2012 <sup>112</sup>	Abstract only
Ehara 2013 <sup>111</sup>	Not matching the protocol
English 2015 <sup>116</sup>	Outcomes do not match protocol
Eshuis 2011 <sup>119</sup>	Random blood glucose
Giakoumidakis2012 <sup>136</sup>	Blood glucose
Gianchandani 2011 <sup>137</sup>	Diagnostic accuracy
Giorgi 2014 <sup>138</sup>	Univariate analysis
Goldstein 2013 <sup>140</sup>	Univariate analysis
Halkos 2008A <sup>152</sup>	Cardiac surgery
Halkos 2008B <sup>153</sup>	Cardiac surgery
Hall 2010 <sup>155</sup>	Outcomes do not match protocol
Hikata 2014 <sup>163</sup>	Univariate analysis
Hong 2009A <sup>168</sup>	Not matching the protocol
Hudson 2010 <sup>171</sup>	Cardiac surgery
King 2011 <sup>197</sup>	Narrative description of data

Reference	Reason for exclusion
Kinoshita 2009 <sup>198</sup>	Cardiac surgery
Kinoshita 2012 <sup>199</sup>	Cardiac surgery
Kiran 2013 <sup>200</sup>	Random blood glucose
Koumpan 2014 <sup>203</sup>	Outcomes do not match protocol
Kunstman 2015 <sup>206</sup>	No extractable data
Lara 2014 <sup>208</sup>	Not a systematic review
Marchant 2009 <sup>230</sup>	Outcomes do not match protocol
Masla 2011 <sup>233</sup>	Cardiac surgery
O'Sullivan 2006 <sup>263</sup>	Not all elective surgery
Salam 2015 <sup>290</sup>	No extractable data
Sato 2010 <sup>292</sup>	Cardiac surgery
Schroeder 2014 <sup>293</sup>	No extractable data
Shah 2014 <sup>299</sup>	Unable to obtain paper
Soares 2013 <sup>311</sup>	Battery of tests
Subramaniam 2014 <sup>314</sup>	Cardiac surgery
Suvag 2011 <sup>316</sup>	HbA1c thresholds
Swenne 2005 <sup>318</sup>	Random blood glucose
Tatar 2013 <sup>322</sup>	Transplant surgery
Tekumit 2010 <sup>323</sup>	Diagnostic accuracy
Tsuruta 2011 <sup>327</sup>	Cardiac surgery
Underwood 2015 <sup>328</sup>	Outcomes do not match the protocol
Van Kuijk 2009 <sup>329</sup>	Not matching the protocol
Wilson 2003 <sup>343</sup>	Cardiac surgery

## K.6.2 HbA1c in undiagnosed diabetes

**Table 7: Studies excluded from the clinical review**

Reference	Reason for exclusion
Abdelmalak 2011 <sup>6</sup>	Not included HbA1c as a preoperative test
Abdelmalak 2014 <sup>7</sup>	Not included HbA1c as a preoperative test
Alsumait 2002 <sup>25</sup>	Not included HbA1c as a preoperative test
Azafarin 2011 <sup>31</sup>	Cardiac surgery an exclusion criterion in the protocol. Study design did not match the protocol
Biery 1987 <sup>45</sup>	Outcomes not matching the protocol
Bock 2015 <sup>51</sup>	Systematic review, checked for references
Boscolo 2014 <sup>54</sup>	Outcomes not matching the protocol
Cavalcantilira 2002 <sup>73</sup>	Included a battery of preoperative tests (HbA1c, blood glucose and ECC)
Chandra 2014 <sup>77</sup>	Not included HbA1c as a preoperative test
Donatelli 2008 <sup>103</sup>	Cardiac surgery an exclusion criterion in the protocol
Dunkelgrun 2008 <sup>105</sup>	Not included HbA1c as a preoperative test
Eshuis 2011 <sup>119</sup>	Not included HbA1c as a preoperative test
Evans 2015 <sup>120</sup>	Outcomes not matching the protocol
Feringa 2008 <sup>124</sup>	Included diabetic patients

Reference	Reason for exclusion
Gianchandani 2011 <sup>137</sup>	Study design (diagnostic accuracy) did not match the protocol
Goldstein 2013 <sup>140</sup>	Included diabetic patients
Goranovic 2014 <sup>145</sup>	Not included HbA1c as a preoperative test
Halkos 2008 <sup>152</sup>	Cardiac surgery an exclusion criterion in the protocol
Halkos 2008a <sup>154</sup>	Cardiac surgery an exclusion criterion in the protocol
Halkos 2008b <sup>153</sup>	Cardiac surgery an exclusion criterion in the protocol
Hjellestad 2015 <sup>165</sup>	Outcomes not matching the protocol
Hudson 2010 <sup>171</sup>	Cardiac surgery an exclusion criterion in the protocol
Jamsen 2010 <sup>181</sup>	No variance analysis
Jamsen 2015 <sup>182</sup>	Included diabetic patients
Kinoshita 2012 <sup>199</sup>	Cardiac surgery an exclusion criterion in the protocol
Kiran 2013 <sup>200</sup>	Not included HbA1c as a preoperative test
Kotagal 2015 <sup>202</sup>	Not included HbA1c as a preoperative test
Koumpanzo 2014 <sup>203</sup>	Study design did not match the protocol
LaBoone 2014 <sup>207</sup>	Unable to obtain paper
Lee 2014 <sup>212</sup>	Not included HbA1c as a preoperative test
Malcolm 2014 <sup>226</sup>	Outcomes not matching the protocol
Marchant 2009 <sup>230</sup>	Comparison of outcomes was made between diabetes, uncontrolled diabetes and no diabetes groups
Masla 2011 <sup>233</sup>	Cardiac surgery an exclusion criterion in the protocol
Morrison 2014 <sup>250</sup>	Not included HbA1c as a preoperative test
Ochoa 2014 <sup>265</sup>	Outcomes not matching the protocol
O'Sullivan 2006 <sup>263</sup>	Included emergency surgeries (no reference on the %)
Sato 2010 <sup>292</sup>	Cardiac surgery an exclusion criterion in the protocol. Study design didn't match our protocol
Shalwala 2015 <sup>300</sup>	Not included HbA1c as a preoperative test
Soares 2013 <sup>311</sup>	Not included HbA1c as a preoperative test
Subramaniam 2014 <sup>314</sup>	Cardiac surgery an exclusion criterion in the protocol
Tekumit 2010 <sup>323</sup>	Study design (diagnostic accuracy) did not match the protocol
Wilson 2003 <sup>343</sup>	Cardiac surgery an exclusion criterion in the protocol
Wukich 2011 <sup>345</sup>	Outcomes not matching the protocol

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