**Appendix F. List of Covariate Adjustment per Individual Studies**

CAD Risk Equivalents included: CAD, cerebrovascular disease, vascular disease, PVD, reduced LVEF, heart failure, or diabetes

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| --- | --- | --- | --- | --- | --- |
| **Study** | **Dialysis (D) or non-D (ND)** | **Troponin Assay** | **Outcome** | **Variables Adjusted for** | **Included in meta-analysis**  **(yes, no)** |
| Abbas, 20052 | ND | Troponin I | All-cause mortality | Age, sex, eGFR, diabetes | NO for HR  Gives adjusted OR but not HR |
| Abbas, 20052 | ND | Troponin T | All-cause mortality | Age, sex, eGFR, diabetes | NO for HR  Gives OR but not HR |
| Alam, 2013129 | D | Troponin I | All-cause mortality | Adjusted for age, time of dialysis, diabetes, history of CAD, CRP | YES-HR |
| Alam, 2013129 | D | Troponin I | CVD mortality | Adjusted for age, time of dialysis, diabetes, history of CAD, CRP | YES-HR |
| Apple, 20027  Apple, 20048 | D | Troponin T | All-cause mortality | Age, history of CAD, time since first dialysis | YES-HR |
| Apple, 20027 | D | Troponin I | All-cause mortality | Age, history of CAD, | YES-HR |
| Bayes-Genis, 2013130 | ND | Troponin T | All-cause mortality | Age, sex, diabetes, ischemic etiology of HF, LVEF, others | NO  HR for troponin presented as continuous variable; unclear if dialysis patients excluded |
| Boulier, 200417 | D | Troponin I | All-cause mortality  Total sample | Age, sex, diabetes, smoking, cholesterol/TG, time in dialysis, dialysis center/ modality, hypertension  (\*although the authors present stratified results by CHD or non-CHD status, main analyses not adjusted for CHD) | YES-HR |
| Boulier, 200417 | D | Troponin I | CVD mortality | Age, sex, diabetes, smoking, cholesterol/TG, time in dialysis, dialysis center/ modality, hypertension | YES-HR |
| Choy, 200322 | D | Troponin T | All-cause mortality | Age, sex, history of CAD, diabetes, years on dialysis | NO for HR. Presented adjusted OR only and not enough data to derive a HR. |
| Claes, 201024 | ND- post renal transplant | Troponin I | Other composite: AMI, revascularization, or death due to an ischemic event | Age, hematocrit, history of cardiovascular disease | NO for HR  Special population - only post renal transplant group |
| Connolly, 200826 | ND – post renal transplant | Troponin T | All-cause mortality | Age, sex, smoking, diabetes, systolic BP, diastolic BP, total cholesterol, HDL, BMI, hemoglobin, serum phosphate, parathyroid hormone | NO - special population of post renal transplant |
| Conway, 200527 | D | Troponin T | MACE | Age, sex, history of CAD, PVD, diabetes, length of time of HD | NO for HR – troponin presented continuously |
| Dierkes, 200031 | D | Troponin T | All-cause mortality | Age, time of dialysis, diabetes, cerebrovascular disease | YES-HR |
| Farkouh, 200333 | D | Troponin I | All-cause mortality | Age, sex, history of CAD, Diabetes, smoking, angina or MI, hypertension, cholesterol levels, CK,CK-MB levels | YES-HR |
| Farshid, 2013131 | Mixed D and ND | Troponin T | All-cause mortality | Age, sex, diabetes, history of MI, LVEF, diastology | NO (HR were not presented separately for dialysis and non-dialysis status, mixed population) |
| Feringa, 200635 | ND | Troponin T | MACE | Age, sex, history of CAD | YES-HR |
| Feringa, 200635 | ND | Troponin T | All-cause mortality | Age, sex, history of CAD, eGFR | YES-HR |
| Hallen, 201144 | D | Troponin T | All-cause mortality | Age, sex, creatinine, duration of disease, CHF, diabetes, albumin, LVEF | YES-HR |
| Hasegawa, 201247 | ND | Troponin T | Composite: MACE | Age, History of CAD, Diabetes, eGFR | YES-HR |
| Hassan, 2014132 | D | Troponin T | All-cause mortality | Age, history of cardiac disease, prior cardiac events, CRP, albumin | NO  HR presented for troponin as a continuous variable only |
| Hassan, 2014132 | D | Troponin T | MACE | Age, history of cardiac disease, prior cardiac events, CRP, albumin | NO for HR.  HR presented for troponin as a continuous variable only |
| Havekes, 200648 | D | Troponin T | All-cause mortality | Age, sex, comorbidity, primary renal disease, smoking, BMI, GFR, BP, hemoglobin, albumin, cholesterol, comorbidity includes history of CAD, PVD, cerebrovascular disease, LVEF | YES-HR |
| Havekes, 200648 | D | Troponin T | CVD Mortality | Age, sex, cormorbidity, primary renal disease, smoking, BMI, GFR, BP, hemoglobin, albumin, cholesterol, comorbidity includes history of CAD, PVD, cerebrovascular disease, LVEF | YES-HR |
| Helleskov Madsen, 200850 | D | Troponin T | All-cause mortality | Age, reduced LVEF, diabetes | YES-HR |
| Helleskov Madsen, 200850 | D | Troponin I | All-cause mortality | Age, reduced LVEF, diabetes | YES-HR |
| Hickson, 200852 | ND and D mixed – waiting for renal transplant | Troponin T | All-cause mortality | Age, sex, race, serum albumin, history of stroke, BMI, smoking, creatinine, dialysis use, time of dialysis, cholesterol, hemoglobin, history of previous transplant | NO for HR  – mixed population of non-dialysis and dialysis |
| Hickson, 200953 | ND – post renal transplant | Troponin T | MACE | Age, dialysis time, low ejection fraction, delayed graft function | NO  -Special population kidney transplant recipients |
| Hocher, 200856 | D | Troponin T | All-cause mortality | Age, history of CAD, diabetes | YES-HR |
| Hocher, 200856 | D | Troponin T | CVD mortality | Age, History of CAD, diabetes | YES-HR |
| Hung, 200459 | D | Troponin I | MACE  Hypertension prone patients | Age, sex, ECG findings (suggestive of previous MI, ischemic changes, LVH) | NO  Adjusted OR only – for subgroup of hypotension prone patients |
| Iliou, 200363 | D | Troponin T | CVD mortality | Age, history of CAD, hematocrit | YES-HR |
| Iliou, 200363 | D | Troponin T | MACE | Age, history of CAD | YES-HR |
| Ishii, 200165 | D | Troponin T | CVD mortality | Hypercholesterolemia, history of heart failure | YES-HR |
| Ishii, 200165 | D | Troponin T | All-cause mortality | Age, history of heart failure | YES-HR |
| Kalaji, 201267 | D | Troponin T | All-cause mortality | Age, history of CAD, time of dialysis, Diabetes, LV ejection fraction | YES-HR |
| Kalaji, 201267 | D | Troponin I | All-cause mortality | Age, history of CAD, diabetes, time of Dialysis | YES-HR |
| Kang, 200968 | D | Troponin I | All-cause mortality | Age, history of CAD, History of CVD, Diabetes, presence of septic shock, serum CRP, albumin | YES-HR |
| Kang, 200968 | D | Troponin I | CVD mortality | Age, history of CAD, Diabetes | YES-HR |
| Lamb, 200777 | ND | Troponin T | All-cause mortality | Age, hemoglobin concentration, vascular disease | YES-HR |
| Lamb, 200777 | ND | Troponin I | All-cause mortality | Age, hemoglobin concentration, vascular disease | YES-HR |
| Levin, 2013133 | ND | Troponin I | All-cause mortality | age, sex, eGFR, history of CVD, serum phosphate, and albumin | YES-HR |
| Lowbeer, 200381 | D | Troponin T | All-cause mortality | Age, sex, cardiovascular disease, malnutrition, diabetes, IL-6 | YES-HR |
| Mallamaci, 200282 | D | Troponin T | All-cause mortality | Age, sex, diabetes, smoking, previous CVD events, LVM, | YES-HR |
| Mallamaci, 200282 | D | Troponin T | CVD mortality | Age, sex, diabetes, smoking, previous CVD events, LVM, | YES-HR |
| McMurray, 201186 | ND | Troponin T | MACE | Age, CHF, smoking, CHD, CVD, PAD, HbA1c | YES-HR |
| Sahinarslan, 2008103 | D | Troponin T | MACE | Age, sex, hypertension, diabetes, hemoglobin, creatinine, albumin | No for HR – presents only adjusted OR. |
| Scheven, 2012105 | ND | Troponin T | MACE | Age, sex, history of cardiovascular disease, smoking, BMI,SBP, cholesterol level, Diabetes | YES-HR |
| Sommerer, 2007111 | D | Troponin T | MACE | Age, sex, history of CAD, NTpro BNP, dialysis >36 months, diabetes | NO  Only adjusted OR not adjusted HR |
| Stolear, 1999112 | D | Troponin T | All-cause mortality | Age, sex, history CAD, CRP hematocrit, pre-albumin | YES-HR |
| Wang, 2007120 | D | Troponin T | All-cause mortality | Age, history of CAD | NO – not enough info for HR. Unclear if HR presented by troponin cutpoint or continuously |
| Wang, 2007120 | D | Troponin T | CVD mortality | Age, history of CAD | NO – not enough info for HR. Unclear if HR presented by troponin cutpoint or continuously |
| Wang, 2007120 | D | Troponin T | MACE | Age, history of CAD | NO – not enough info for HR. Unclear if HR presented by troponin cutpoint or continuously |
| Wood, 2003125 | ND | Troponin T | All-cause mortality | Age, sex, diabetes, history of CAD, creatinine | No for HR - Troponin as continuous |
| deFilippi, 200329 | D | Troponin T | All-cause mortality | Age, sex | YES-HR |
| Duman, 200532 | D | Troponin T | All-cause mortality | Age | NO for HR  Adjusted OR only |
| Duman, 200532 | D | Troponin I | All-cause mortality | Age | No for HR  Adjusted OR only |
| Duman, 200532 | D | Troponin T | CVD mortality | Age | NO for HR  Adjusted OR only |
| Geerse, 201240 | D | Troponin I | All-cause mortality | Age, Sex | YES-HR |
| Han, 200946 | D | Troponin T | MACE | Age, IL-6, CRP | YES-HR |
| Holden, 201258 | D | Troponin T | All-cause mortality | Age | YES-HR |
| Iliou, 200363 | D | Troponin T | All-cause mortality | Age, hematocrit  *(Note: For the CVD mortality outcome, history of CAD is adjusted for but not for all-cause mortality outcome)* | YES-HR |
| Iliou, 200363 | D | Troponin I | All-cause mortality | Age, hematocrit | YES-HR |
| McGill, 201085 | D | Troponin T | All-cause mortality | Adjusted- but no details | NO- Troponin presented as continuous |
| Satyan, 2007104 | D | Troponin T | All-cause mortality | Age, sex, race, serum albumin, ESRD cause | YES-HR |
| Satyan, 2007104 | D | Troponin T | CVD mortality | Age, sex, race, serum albumin, ESRD cause | YES-HR |
| Svensson, 2009114 | D | Troponin T | All-cause mortality | Age, sex, BP | NO. Troponin as continuous |
| Abaci, 20041 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Abaci, 20041 | D | Troponin I | All-cause mortality  Cardio mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Abaci, 20041 | D | Troponin T | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Apple, 19975 | D | Troponin T  Troponin I | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Apple, 19975 | D | Troponin T | MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Artunc, 201210 | D | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Artunc, 201210 | D | Troponin I | All-cause mortality | Unadjusted | YES-HR |
| Bagheri, 200913 | D | Troponin T | All-cause mortality | Unadjusted | NO, Insufficient data, unclear measures, did not provide data for all participants |
| Brunet, 200819 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Brunet, 200819 | D | Troponin T | MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Choy, 200322 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Chrysochou, 200923 | Mixed ND and D | Troponin T | All-cause mortality | Unadjusted | NO – population is selective for renal artery stenosis patients, not separated by dialysis and non-dialysis, unclear if HR for troponin is continuous or cutpoint |
| Codognotto, 201025 | D | Troponin T | All-cause mortality | Adjusted –details NS (adjusted for ProBNP and CRP, unclear if adjusted for age or other variables). | YES-HR |
| Deegan, 200128 | D | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Deegan, 200128 | D | Troponin T | CVD mortality | Unadjusted | NO – not enough information for HR  Included in OR meta-analysis |
| Duman, 200532 | D | Troponin I | CVD mortality | Unadjusted | NO – insufficient information to derive any values |
| Fernandez-Reyes, 200436 | D | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Gaiki, 201239 | D | Troponin I | MACE | Unadjusted | NO – insufficient information for analyses |
| Giocoechea, 200441 | ND | Troponin T | MACE | Unadjusted | YES-HR |
| Heeschen, 200049 | D | Troponin I | MACE | Unadjusted | NO – insufficient information for analyses |
| Hickman, 200951 | D | Troponin T | All-cause mortality | Unadjusted | NO for HR (not enough information to derive a HR)  YES for OR |
| Hojs, 200557 | D | Troponin T | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Hussein, 200460 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Ishii, 200165 | D | Troponin I | All-cause mortality  CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Kanwar, 200669 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis  Separated into CAD+ and CAD- groups; used CHD- group |
| Katerinis, 200870 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Kertai, 200471 | ND | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Khan, 200172 | D | Troponin I | All-cause mortality  CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Lang, 200178 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Lang, 200178 | D | Troponin T  Troponin I | All-cause mortality  CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Le Goff, 200779 | D | Troponin T | All-cause mortality  CVD mortality | Unadjusted | NO not enough info for HR  Troponin results combined with NT-proBNP levels, not troponin alone. |
| Ie, 200461 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Lowbeer, 200281 | D | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Mockel, 199988 | D and ND | Troponin T, Troponin I | All-cause mortality | Unadjusted | NO- Mixed D and ND, no statistical measures of association given |
| Morton, 199889 | D | Troponin I | All-cause mortality | Unadjusted | NO – no data for analysis |
| Musso, 199990 | D and ND | Troponin T, Troponin I | All-cause mortality | Unadjusted | NO-Results are not reported separately for a dialysis population |
| Ooi, 199992  Ooi, 200193 | D | Troponin T | All-cause mortality | Unadjusted | YES-HR |
| Ooi, 199992 | D | Troponin T | CVD mortality | Unadjusted | YES-HR |
| Peetz, 200395 | D | Troponin I | MACE | Unadjusted | NO – OR given, but no CI or number of events in each arm |
| Petrovic, 200996 | D | Troponin T | All-cause mortality | Unadjusted | NO  Insufficient information to derive any HR or OR |
| Petrovic, 200996 | D | Troponin I | All-cause mortality | Unadjusted | NO – insufficient data to be included in meta-analysis |
| Porter, 199897 | D | Troponin I | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Porter, 1998;97  Porter, 200098 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Porter, 200098 | D | Troponin T | MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Roberts, 2004100 | D | Troponin I | MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Roberts, 2009101 | D | Troponin T | All-cause mortality | Unadjusted | NO: Definition of troponin elevation is qualitatively different (# of times troponin was elevated) |
| Roberts, 2009101 | D | Troponin T | CVD mortality | Unadjusted | NO: Definition of troponin elevation is qualitatively different (# of times troponin was elevated) |
| Roppolo, 1999102 | D | Troponin I | MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Sahinarslan, 2008103 | D | Troponin T | All-cause mortality  MACE | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Scott, 2003106 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR. Study provided a coefficient for a long rank test; insufficient information to derive other statistics. |
| Sharma, 2006;108Sharma, 2005107 | D | Troponin T | All-cause mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Trape, 2008115 | D | Troponin T | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Vichairuangthum, 2006118 | D | Troponin I | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis |
| Yakupoglu, 2002126 | D | Troponin I | CVD mortality | Unadjusted | NO – not enough info for HR  Included in OR meta-analysis  Excluded in a sensitivity analysis |

AMI = acute myocardial infarction; BMI = body mass index; BP = blood pressure; CAD = coronary artery disease; CHD = coronary heart disease; CRP = C-reactive protein; CVD = cardiovascular disease; D = dialysis; ECG = electrocardiogram; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; HbA1c = hemoglobin A1c; HDL = high density lipoprotein; HF = heart failure; HR = hazard ratio; LV = left ventricular; LVEF = left ventricular ejection fraction; MACE = major adverse cardiovascular events; ND = nondialysis; OR = odds ratio; PAD = peripheral arterial disease; PVD = peripheral vascular disease; TG = triglycerides