Appendices

Appendix 1: Literature search strategies

Clinical Effectiveness search strategies

Medline (OvidSP): 2000-2011/2/wk 2
Searched 17.2.11

1 Somatom definition flash.ti,ab,ot,hw. (4)
2 DSCT.ti,ab,ot,hw. (244)
3 (Aquilion-1 or Aquilion-one).ti,ab,ot,hw. (9)
4 Brilliance ict.ti,ab,ot,hw. (1)
5 (Discovery ct750 or Discovery ct-750).ti,ab,ot,hw. (1)
6 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$).ti,ab,ot,hw. (2)
7 (320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$).ti,ab,ot,hw. (59)
8 (256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).ti,ab,ot,hw. (67)
9 (128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).ti,ab,ot,hw. (40)
10 ('2' adj2 (energy or source$)).ti,ab,ot,hw. (2402)
11 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).ti,ab,ot,hw. (1137)
12 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (165)
13 modern cone-beam dual-source spiral.ti,ab,ot,hw. (1)
14 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (1)
15 or/1-14 (3962)
16 heart defects, congenital/ or aortic coarctation/ or cor triatriatum/ or eisenmenger complex/ or "isolated noncompaction of the ventricular myocardium"/ or leopard syndrome/ or marfan syndrome/ or "tetralogy of fallot"/ or "trilogy of fallot"/ or turner syndrome/ (59436)
17 exp Coronary Disease/ or myocardial ischemia/ or exp myocardial infarction/ (289267)
18 ((pulmonary or aortic or aorta or coronary or cardiac or valve) adj2 (stenosis or atresia)).ti,ab,ot,hw. (49077)
19 (congenital$ adj2 arter$ adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (460)
20 (congenital$ adj2 heart adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (43228)
21 (CAD or IAA or VSD or CHD or LVOT or PVOD or UVH or TAPVD or TAPVR or PAPVD or PAPVR or MAPCA or MAP-CA).ti,ab,ot. (34019)
22 (TOF or TAPVC or COA or IAA or SS or PAPVC).ti,ab,ot. (63756)
23 (Lutembacher$ adj2 (syndrome or complex)).ti,ab,ot,hw. (156)
24 (trilogy adj2 fallot).ti,ab,ot,hw. (54)
25 (Interrupt$ adj3 aortic arch).ti,ab,ot,hw. (920)
26 (tetralogy adj2 fallot).ti,ab,ot,hw. (8363)
27 total$ anomalous pulmonary venous connection$.ti,ab,ot,hw. (500)
28 Bicuspid aortic valve$.ti,ab,ot,hw. (1167)
29 Double inlet left ventricle$.ti,ab,ot,hw. (165)
30 (Coarctat$ adj3 aorta).ti,ab,ot,hw. (3560)
31 (Co-arctat$ adj3 aorta).ti,ab,ot,hw. (3)
32 Interrupt$ aort$.ti,ab,ot,hw. (616)
33 (Scimitar adj2 (syndrome or complex)).ti,ab,ot,hw. (450)
34 Partial$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (229)

35 Total$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (500)
36 (Shone$ adj2 (syndrome or complex or anomaly or defect$ or deform$ or malform$ or abnormal$)).ti,ab,ot,hw. (66)
37 (Marfan$ adj2 (syndrome or complex)).ti,ab,ot,hw. (5278)
38 Marfans.ti,ab,ot,hw. (1930)
39 (eisenmenger$ adj2 (syndrome or complex)).ti,ab,ot,hw. (989)
40 univentric$ heart$.ti,ab,ot,hw. (507)
41 uni-ventric$ heart$.ti,ab,ot,hw. (3)
42 ((coronary or heart) adj2 disease).ti,ab,ot,hw. (240566)
43 (MI or IHD).ti,ab,ot,ab. (24125)
44 (isch?emic heart disease$ or myocardi$ isch?em$ or angina$).ti,ab,ot,hw. (106061)
45 ((right or double) adj2 aort$ arch$).ti,ab,ot,hw. (1350)
46 (aberrant subclavian arter$ or aberrant sub-clavian arter$).ti,ab,ot,hw. (122)
47 (Vascular ring or pulmonary arter$ sling or anomalous coronary arter$).ti,ab,ot,hw. (1066)
48 truncus arteriosus.ti,ab,ot,hw. (1369)
49 common arterial trunk.ti,ab,ot,hw. (127)
50 (superior cavopulmonary anastamosis or superior cavo-pulmonary anastamosis).ti,ab,ot,hw. (2)
51 arterial switch.ti,ab,ot,hw. (912)
52 (total cavopulmonary connection$ or total cavo-pulmonary connection$).ti,ab,ot,hw. (449)
53 partial$ anomalous pulmonary venous drainage.ti,ab,ot,hw. (135)
54 (cardiac adj2 (tumo?r$ or cancer$ or malignan$ or neoplas$)).ti,ab,ot,hw. (2451)
55 (DAA or TCPC).ti,ab,ot. (555)
56 (Kawasaki adj2 (disease$ or disorder$ or syndrome$)).ti,ab,ot,hw. (3596)
57 major aorto-pulmonary collateral arter$.ti,ab,ot,hw. (26)
58 Coronary Aneurysm/ (2461)
59 ((cardiac$ or cardio$ or heart$ or aort$ or coronary) adj4 (heterotax$ or laterality or isomerism)).ti,ab,ot,hw. (215)
60 Truncus Arteriosus/ (127)
61 Coronary Vessel Anomalies/ (5958)
62 Truncus Arteriosus, Persistent/ (606)
63 exp Norwood Procedures/ (1630)
64 Aortic Aneurysm/ (16383)
65 ((rastelli or mustard or senning or le compte) adj4 (cardiac$ or cardio$ or heart$ or aort$ or coronar$)).ti,ab,ot,hw. (72)
66 ((fontan or hemifontan or hemi-fontan or glenn or norwood) adj3 (procedure$ or operation$ or method$ or approach$)).ti,ab,ot,hw. (2926)
67 exp Heart Neoplasms/ (11963)
68 exp Teratoma/ (16305)
69 Myxoma/ (5162)
70 (aortic root or myxoma$ or angiomyxoma$).ti,ab,ot,hw. (12088)
71 or/16-70 (605347)
72 animals/ not (animals/ and humans/) (3450666)
73 71 not 72 (542288)
74 15 and 73 (370)
75 limit 74 to yr="2000 -Current" (339)

Medline In-Process (OvidSP): 2000-2011/2/16
Medline Daily Update (OvidSP): 2000-2011/2/16
Searched 17.2.11

1 Somatom definition flash.ti,ab,ot,hw. (0)
2 DSCT.ti,ab,ot,hw. (23)
3 (Aquilion-1 or Aquilion-one).ti,ab,ot,hw. (0)
4 Brilliance ict.ti,ab,ot,hw. (0)
5 (Discovery ct750 or Discovery ct-750).ti,ab,ot,hw. (0)
6 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$).ti,ab,ot,hw. (0)
7 (320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$).ti,ab,ot,hw. (17)
8 (256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).ti,ab,ot,hw. (7)
9 (128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).ti,ab,ot,hw. (7)
10 ('2' adj2 (energy or source$)).ti,ab,ot,hw. (412)
11 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).ti,ab,ot,hw. (109)
12 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (20)
13 modern cone-beam dual-source spiral.ti,ab,ot,hw. (0)
14 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (0)
15 or/1-14 (565)
16 heart defects, congenital/ or aortic coarctation/ or cor triatriatum/ or eisenmenger complex/ or "isolated noncompaction of the ventricular myocardium"/ or leopard syndrome/ or marfan syndrome/ or "tetralogy of fallot"/ or "trilogy of fallot"/ or turner syndrome/ (24)
17 exp Coronary Disease/ or myocardial ischemia/ or exp myocardial infarction/ (86)
18 ((pulmonary or aortic or aorta or coronary or cardiac or valve) adj2 (stenosis or atresia)).ti,ab,ot,hw. (715)
19 (congenital$ adj2 arter$ adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (20)
20 (congenital$ adj2 heart adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (741)
21 (CAD or IAA or VSD or CHD or LVOT or PVOD or UVH or TAPVD or TAPVR or PAPVD or PAPVR or MAPCA or MAP-CA).ti,ab,ot. (2141)
22 (TOF or TAPVC or COA or IAA or SS or PAPVC).ti,ab,ot. (3935)
23 (Lutembacher$ adj2 (syndrome or complex)).ti,ab,ot,hw. (1)
24 (trilogy adj2 fallot).ti,ab,ot,hw. (0)
25 (Interrupt$ adj3 aortic arch).ti,ab,ot,hw. (26)
26 (tetralogy adj2 fallot).ti,ab,ot,hw. (132)
27 total$ anomalous pulmonary venous connection$.ti,ab,ot,hw. (15)
28 Bicuspid aortic valve$.ti,ab,ot,hw. (65)
29 Double inlet left ventricle$.ti,ab,ot,hw. (3)
30 (Coarctat$ adj3 aorta).ti,ab,ot,hw. (115)
31 (Co-arctat$ adj3 aorta).ti,ab,ot,hw. (1)
32 Interrupt$ aort$.ti,ab,ot,hw. (19)
33 (Scimitar adj2 (syndrome or complex)).ti,ab,ot,hw. (12)
34 Partial$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (10)
35 Total$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (15)
36 (Shone$ adj2 (syndrome or complex or anomaly or defect$ or deform$ or malform$ or abnormal$)).ti,ab,ot,hw. (3)
37 (Marfan$ adj2 (syndrome or complex)).ti,ab,ot,hw. (123)
38 Marfans.ti,ab,ot,hw. (25)
39 (eisenmenger$ adj2 (syndrome or complex)).ti,ab,ot,hw. (27)

40 univentric$ heart$.ti,ab,ot,hw. (15)
41 uni-ventric$ heart$.ti,ab,ot,hw. (0)
42 ((coronary or heart) adj2 disease).ti,ab,ot,hw. (5009)
43 (MI or IHD).ti,ab,ot,ab. (1336)
44 (isch?emic heart disease$ or myocardi$ isch?em$ or angina$).ti,ab,ot,hw. (2059)
45 ((right or double) adj2 aort$ arch$).ti,ab,ot,hw. (50)
46 (aberrant subclavian arter$ or aberrant sub-clavian arter$).ti,ab,ot,hw. (2)
47 (Vascular ring or pulmonary arter$ sling or anomalous coronary arter$).ti,ab,ot,hw. (40)
48 truncus arteriosus.ti,ab,ot,hw. (26)
49 common arterial trunk.ti,ab,ot,hw. (2)
50 (superior cavopulmonary anastamosis or superior cavo-pulmonary anastamosis).ti,ab,ot,hw. (0)
51 arterial switch.ti,ab,ot,hw. (33)
52 (total cavopulmonary connection$ or total cavo-pulmonary connection$).ti,ab,ot,hw. (21)
53 partial$ anomalous pulmonary venous drainage.ti,ab,ot,hw. (1)
54 (cardiac adj2 (tumo?r$ or cancer$ or malignan$ or neoplas$)).ti,ab,ot,hw. (107)
55 (DAA or TCPC).ti,ab,ot. (53)
56 (Kawasaki adj2 (disease$ or disorder$ or syndrome$)).ti,ab,ot,hw. (115)
57 major aorto-pulmonary collateral arter$.ti,ab,ot,hw. (3)
58 Coronary Aneurysm/ (0)
59 ((cardiac$ or cardio$ or heart$ or aort$ or coronary) adj4 (heterotax$ or laterality or isomerism)).ti,ab,ot,hw. (10)
60 Truncus Arteriosus/ (0)
61 Coronary Vessel Anomalies/ (3)
62 Truncus Arteriosus, Persistent/ (0)
63 exp Norwood Procedures/ (0)
64 Aortic Aneurysm/ (16)
65 ((rastelli or mustard or senning or le compte) adj4 (cardiac$ or cardio$ or heart$ or aort$ or coronar$)).ti,ab,ot,hw. (2)
66 ((fontan or hemifontan or hemi-fontan or glenn or norwood) adj3 (procedure$ or operation$ or method$ or approach$)).ti,ab,ot,hw. (88)
67 exp Heart Neoplasms/ (4)
68 exp Teratoma/ (4)
69 Myxoma/ (1)
70 (aortic root or myxoma$ or angiomyxoma$).ti,ab,ot,hw. (394)
71 or/16-70 (13434)
72 animals/ not (animals/ and humans/) (1216)
73 71 not 72 (13398)
74 15 and 73 (34)
75 limit 74 to yr="2000 -Current" (33)

Embase (OvidSP): 2000-2011/wk 6
Searched 17.2.11

1 Somatom definition flash.ti,ab,ot,hw. (11)
2 DSCT.ti,ab,ot,hw. (333)
3 (Aquilion-1 or Aquilion-one).ti,ab,ot,hw. (19)
4 Brilliance ict.ti,ab,ot,hw. (4)
5 (Discovery ct750 or Discovery ct-750).ti,ab,ot,hw. (2)
6 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$ or 320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$).ti,ab,ot,hw. (155)
7 (256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).ti,ab,ot,hw. (92)
8 (128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).ti,ab,ot,hw. (73)
9 ('2' adj2 (energy or source$)).ti,ab,ot,hw. (2472)
10 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).ti,ab,ot,hw. (1437)
11 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (212)
12 modern cone-beam dual-source spiral.ti,ab,ot,hw. (0)
13 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (1)
14 or/1-13 (4512)
15 congenital heart malformation/ or cor triatriatum/ or coronary vessel malformation/ or eisenmenger complex/ or heterotaxy syndrome/ (29152)
16 fallot tetralogy/ (8913)
17 exp aorta anomaly/ (17993)
18 coronary artery anomaly/ (2536)
19 scimitar syndrome/ (387)
20 LEOPARD syndrome/ (248)
21 Marfan syndrome/ (5781)
22 heart atrium septum defect/ (9190)
23 Turner syndrome/ (7509)
24 exp coronary artery disease/ (167530)
25 exp heart infarction/ (198634)
26 heart muscle ischemia/ (58741)
27 arterial trunk/ (735)
28 mucocutaneous lymph node syndrome/ (5745)
29 exp heart aneurysm/ (8434)
30 norwood procedure/ (477)
31 aorta aneurysm/ or aorta dissecting aneurysm/ or aorta sinus aneurysm/ (16981)
32 teratoma/ (16384)
33 exp myxoma/ (6377)
34 heart tumor/ (7896)
35 mustard operation/ (376)
36 ((pulmonary or aortic or aorta or coronary or cardiac or valve) adj2 (stenosis or atresia)).ti,ab,ot,hw. (50571)
37 (congenital$ adj2 arter$ adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (521)
38 (congenital$ adj2 heart adj2 (defect$ or deform$ or malform$ or anomal$ or abnormal$ or disease$)).ti,ab,ot,hw. (46328)
39 (CAD or IAA or VSD or CHD or LVOT or PVOD or UVH or TAPVD or TAPVR or PAPVD or PAPVR or MAPCA or MAP-CA).ti,ab,ot. (44393)
40 (TOF or TAPVC or COA or IAA or SS or PAPVC).ti,ab,ot. (72919)
41 (Lutembacher$ adj2 (syndrome or complex)).ti,ab,ot,hw. (140)
42 (trilogy adj2 fallot).ti,ab,ot,hw. (29)

43 (Interrupt$ adj3 aortic arch).ti,ab,ot,hw. (989)
44 (tetralogy adj2 fallot).ti,ab,ot,hw. (9728)
45 total$ anomalous pulmonary venous connection$.ti,ab,ot,hw. (551)
46 Bicuspid aortic valve$.ti,ab,ot,hw. (1610)
47 Double inlet left ventricle$.ti,ab,ot,hw. (176)
48 (Coarctat$ adj3 aorta).ti,ab,ot,hw. (9144)
49 (Co-arctat$ adj3 aorta).ti,ab,ot,hw. (3)
50 Interrupt$ aort$.ti,ab,ot,hw. (680)
51 (Scimitar adj2 (syndrome or complex)).ti,ab,ot,hw. (502)
52 Partial$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (255)
53 Total$ anomalous pulmonary venous connect$.ti,ab,ot,hw. (551)
54 (Shone$ adj2 (syndrome or complex or anomaly or defect$ or deform$ or malform$ or abnormal$)).ti,ab,ot,hw. (84)
55 (Marfan$ adj2 (syndrome or complex)).ti,ab,ot,hw. (6455)
56 Marfans.ti,ab,ot,hw. (2031)
57 (eisenmenger$ adj2 (syndrome or complex)).ti,ab,ot,hw. (1340)
58 univentric$ heart$.ti,ab,ot,hw. (593)
59 uni-ventric$ heart$.ti,ab,ot,hw. (6)
60 ((coronary or heart) adj2 disease).ti,ab,ot,hw. (335859)
61 (isch?emic heart disease$ or myocardi$ isch?em$ or angina$).ti,ab,ot,hw. (164773)
62 (MI or IHD).ti,ab,ot. (32623)
63 (isch?emic heart disease$ or myocardi$ isch?em$ or angina$).ti,ab,ot,hw. (164773)
64 ((right or double) adj2 aort$ arch$).ti,ab,ot,hw. (1466)
65 (aberrant subclavian arter$ or aberrant sub-clavian arter$).ti,ab,ot,hw. (139)
66 (Vascular ring or pulmonary arter$ sling or anomalous coronary arter$).ti,ab,ot,hw. (3918)
67 truncus arteriosus.ti,ab,ot,hw. (1200)
68 common arterial trunk.ti,ab,ot,hw. (153)
69 (superior cavopulmonary anastamosis or superior cavo-pulmonary anastamosis).ti,ab,ot,hw. (2)
70 arterial switch.ti,ab,ot,hw. (1117)
71 (total cavopulmonary connection$ or total cavo-pulmonary connection$).ti,ab,ot,hw. (553)
72 partial$ anomalous pulmonary venous drainage.ti,ab,ot,hw. (142)
73 (DAA or TCPC).ti,ab,ot. (729)
74 (Kawasaki adj2 (disease$ or disorder$ or syndrome$)).ti,ab,ot,hw. (4378)
75 major aorto-pulmonary collateral arter$.ti,ab,ot,hw. (34)
76 ((cardiac$ or cardio$ or heart$ or aort$ or coronary) adj4 (heterotax$ or laterality or isomerism)).ti,ab,ot,hw. (275)
77 ((rastelli or mustard or senning or le compte) adj4 (cardiac$ or cardio$ or heart$ or aort$ or coronar$)).ti,ab,ot,hw. (80)
78 ((fontan or hemifontan or hemi-fontan or glenn or norwood) adj3 (procedure$ or operation$ or method$ or approach$)).ti,ab,ot,hw. (4106)
79 (aortic root or myxoma$ or angiomyxoma$).ti,ab,ot,hw. (13782)
80 or/15-79 (805212)
81 animal/ or animal experiment/ (3045231)
82 (rat or rats or mouse or mice or murine or rodent or rodents or hamster or hamsters or pig or pigs or porcine or rabbit or rabbits or animal or animals or dogs or dog or cats or cow or bovine or sheep or ovine or monkey or monkeys).mp. (4666017)
83 or/81-82 (4666017)
84 exp human/ or human experiment/ (12216815)
85 82 not (82 and 84) (3748300)

86 80 not 85 (725233)
87 14 and 86 (560)
88 limit 87 to yr="2000 -Current" (527)

Cochrane Database of Systematic Reviews (CDSR) (Internet) Issue 1:2011. 2000-2011
Cochrane Central Register of Controlled Trials (CENTRAL) (Internet) Issue 1:2011. 2000-2011
Searched 17.2.11

#1 (Somatom definition flash):ti,ab,kw 0
#2 DSCT:ti,ab,kw 4
#3 (Aquilion-1 or Aquilion-one):ti,ab,kw 0
#4 (Brilliance near ict):ti,ab,kw 0
#5 "Discovery ct750":ti,ab,kw 0
#6 "Discovery ct-750":ti,ab,kw 0
#7 (640row* or 640-row* or 640-detect* or 640slice* or 640-slice* or 320row* or 320-row* or 320-detect* or 320slice* or 320-slice*):ti,ab,kw 0
#8 (256row* or 256-row* or 256-detect* or 256slice* or 256-slice*):ti,ab,kw 0
#9 (128row* or 128-row* or 128-detect* or 128slice* or 128-slice*):ti,ab,kw 1
#10 ("2" near/2 (energy or source*)):ti,ab,kw 185
#11 (Dual* near/2 (energy or source*) near/3 (CT or scan* or DSCT or imag* or multidetect* or multi-detect* or computed or tomography*)):ti,ab,kw 50
#12 (High definition near/3 (CT or scan* or DSCT or imag* or multidetect* or multi-detect* or computer or tomography*)):ti,ab,kw 7
#13 (modern cone-beam dual-source spiral):ti,ab,kw 0
#14 (high pitch dual spiral near/3 (CT or scan* or imag* or technique* or protocol* or DSCT or multidetect* or multi-detect* or computer or tomography*)):ti,ab,kw 0
#15 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14) 242
#16 (#15), from 2000 to 2011 **168**

CDSR search retrieved 3 references.
CENTRAL search retrieved 154 references.

Database of Abstracts of Reviews of Effects (DARE) (Internet) 2000-2011/02/15
NHS Economic Evaluation Database (NHS EED) (Internet) 2000-2011/02/15
Health Technology Assessment Database (HTA) (Internet) 2000-2011/02/15
Searched 15.2.11

1 (Somatom NEAR definition NEAR flash) 0
2 DSCT:ti 0
3 DSCT 0
4 (Aquilion-1 OR Aquilion-one) 0
5 (Brilliance NEAR ict) 0
6 "Discovery ct750" 0
7 "Discovery ct-750" 0
8 (640slice* OR 640-slice* or 640row* or 640-row* or 640-detect*) 0
9 (256slice* OR 256-slice* or 256row* or 256-row* or 256-detect*) 2
10 (128slice* OR 128-slice* or 128row* or 128-row* or 128-detect* or 320slice* OR 320-slice* or 320row* or 320-row* or 320-detect*) 0
11 ("2" NEAR energy) 88
12 ("2" NEAR source*) 411
13 (Dual* NEAR energy NEAR CT) 2
14 (Dual* NEAR energy NEAR scan*) 9
15 (Dual* NEAR energy NEAR imag*) 5
16 (Dual* NEAR energy NEAR multidetect*) 0
17 (Dual* NEAR energy NEAR multi-detect*) 0
18 (Dual* NEAR energy NEAR Computed) 16
19 (Dual* NEAR energy NEAR tomograph*) 21
20 (Dual* NEAR source NEAR CT) 1
21 (Dual* NEAR source NEAR scan*) 0
22 (Dual* NEAR source NEAR imag*) 1
23 (Dual* NEAR source NEAR multidetect*) 0
24 (Dual* NEAR source NEAR multi-detect*) 0
25 (Dual* NEAR source NEAR Computed) 0
26 (Dual* NEAR source NEAR tomograph*) 0
27 (High NEAR definition NEAR CT) 0
28 (High NEAR definition NEAR scan*) 0
29 (High NEAR definition NEAR imag*) 2
30 (High NEAR definition NEAR multidetect*) 0
31 (High NEAR definition NEAR multi-detect*) 0
32 (High NEAR definition NEAR Computed) 0
33 (High NEAR definition NEAR tomograph*) 0
34 (modern NEAR cone-beam NEAR dual-source NEAR spiral) 0
35 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 525
36 #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 527
37 #36 RESTRICT YR 2000 2011 **415**

DARE search retrieved 181 references.
NHS EED search retrieved 182 references.
HTA search retrieved 52 references.

Science Citation Index (SCI) (Web of Science): 2000-2011/03/05
Searched 9.3.11

# 16 2,853 #14 not #15
Databases=SCI-EXPANDED Timespan=2000-2011

# 15 >100,000 TS=(cat or cats or dog or dogs or animal or animals or rat or rats or hamster or hamster or feline or ovine or canine or bovine or sheep)
Databases=SCI-EXPANDED Timespan=2000-2011

# 14 3,079 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13
Databases=SCI-EXPANDED Timespan=2000-2011

# 13 9 TS=(high SAME pitch SAME dual SAME spiral SAME (CT or scan* or imag* or technique* or protocol* or DSCT or multidetect* or multi-detect* or computer or tomograph*))
Databases=SCI-EXPANDED Timespan=2000-2011

# 12 1 TS=(modern SAME cone-beam SAME dual-source SAME spiral)
Databases=SCI-EXPANDED Timespan=2000-2011

# 11 401 TS=(High SAME definition SAME (CT or scan* or DSCT or imag* or multidetect* or multi-detect* or computer or tomograph*))
Databases=SCI-EXPANDED Timespan=2000-2011

# 10 2,443 TS=(Dual* SAME (energy or source*) SAME (CT or scan* or DSCT or imag* or multidetect* or multi-detect* or computed or tomograph*))
Databases=SCI-EXPANDED Timespan=2000-2011

# 9 121 TS=(128slice* or 128-slice* or 128row* or 128-row* or 128-detect* or 320slice* OR 320-slice* or 320row* or 320-row* or 320-detect*)
Databases=SCI-EXPANDED Timespan=2000-2011

# 8 100 TS=(256slice* or 256-slice* or 256row* or 256-row* or 256-detect*)
Databases=SCI-EXPANDED Timespan=2000-2011

# 7 3 TS=(640slice* or 640-slice* or 640row* or 640-row* or 640-detect*)
Databases=SCI-EXPANDED Timespan=2000-2011

# 6 1 TS=(Discovery SAME ct-750)
Databases=SCI-EXPANDED Timespan=2000-2011

# 5 0 TS=(Discovery SAME ct750)
Databases=SCI-EXPANDED Timespan=2000-2011

# 4 1 TS=(Brilliance SAME ict)
Databases=SCI-EXPANDED Timespan=2000-2011

# 3 5 TS=(Aquilion-1 or Aquilion-one)
Databases=SCI-EXPANDED Timespan=2000-2011

# 2 186 TS=DSCT
Databases=SCI-EXPANDED Timespan=2000-2011

# 1 4 TS=(Somatom SAME definition SAME flash)
Databases=SCI-EXPANDED Timespan=2000-2011

Clinicaltrials.gov (Internet)
http://clinicaltrials.gov/ct2/search/advanced
Searched 9.3.11

Advanced search option – search terms box

Search terms	**Intervention**	**Results**
Somatom	-	3
DSCT	-	11
Aquilion	-	0
Brilliance	-	3
ct750	-	0
Ct-750	-	0
640-slice OR 640slice or 640row or 640-row or 640-detect	-	0
256-slice OR 256slice or 256row or 256-row or 256-detect	-	0
128-slice OR 128slice or 128row or 128-row or 128-detect or 320slice OR 320-slice or 320row or 320-row or 320-detect	-	0
dual energy	-	224
dual source	-	26
-	High definition	80
high pitch dual spiral	-	1
TOTAL		**348**

mRCT – metaRegister of Controlled Trials (Internet)
http://www.controlled-trials.com/mrct/search.html
Searched 9.3.11

Intervention	**Results**
Somatom or DSCT or Aquilion or Brilliance or ct750 or Ct-750	4
640-slice OR 640slice or 640row or 640-row or 640-detect	54
256-slice OR 256slice or 256row or 256-row or 256-detect	91
128-slice OR 128slice	0
128row or 128-row	0
128-detector	0
320slice OR 320-slice	0
320row or 320-row	1
320-detector	0
dual energy	189
dual source	3
High definition	9
high pitch dual spiral	0
TOTAL	**351**

WHO International Clinical Trials Registry Platform (ICTRP) (Internet)
http://www.who.int/ictrp/en/
Searched 9.3.11

Advanced search option
– Recruitment status = ALL
- Date limit: 01/01/2000-09/03/2011

Intervention	**Results**
Somatom or DSCT or Aquilion or Brilliance or ct750 or Ct-750	5
640-slice OR 640slice or 640row or 640-row or 640-detector	0
256-slice OR 256slice or 256row or 256-row or 256-detector	0
128-slice OR 128slice or 128row or 128-row or 128-detector	0
320slice OR 320-slice or 320row or 320-row or 320-detector	5
dual energy	11
dual source	7
High definition	6
high pitch dual spiral	1
TOTAL	**35**

Electronic searching of conference abstracts

American College of Cardiology (Internet): all dates
http://www.cardiosource.org/Meetings/Previous-Meetings-OLD.aspx
Searched 22.3.11

Search terms	Results
128+row	96
256+row	112
320+row	86
640+row	21
128+slice	202
256+slice	249
320+slice	141
640+slice	249
128+detector	91
256+detector	96
320+detector	82
640+detector	23
Aquilion	26
Brilliance ict	1
Somatom+definition+flash	2
DSCT	21
high+pitch+dual+spiral	33
modern cone-beam dual-source spiral	2
TOTAL	**1533**

European Society of Cardiology (ESC) (Internet): all dates
http://www.escardio.org/congresses/past_congresses/Pages/past-ESC-congresses.aspx
Searched 22.3.11

Search terms	**Results**
256 row	4
320 row	16
640 row	0
128 row	1
256 slice	16
320 slice	26
640 slice	0
128 slice	17
256 detector	5
320 detector	18
640 detector	0
128 detector	6
Aquilion	24
DSCT	41
Dual and energy and CT	15
Dual and energy and scan	9
dual and source and scan	43
high pitch dual spiral	8
Somatom	26
TOTAL	**275**

Society of Cardiovascular Computed Tomography (SCCT) (Internet): 2006-2007, 2009-2010
http://www.scct.org/annualmeeting/2010/index.cfm
Searched 22.3.11

Search terms	2010	2009	2008	2007	2006
128 row	0	0	-	-	0
256 row	0	0	-	-	0
320 row	6	2	-	-	0
640 row	0	0	-	-	0
128 slice	2	0	-	-	0
256 slice	1	3	-	-	0
320 slice	3	0	-	-	0
640 slice	0	0	-	-	0
128 detector	1	0	-	-	0
256 detector	0	0	-	-	0
320 detector	3	1	-	-	0
640 detector	0	0	-	-	0
Aquilion	0	2	-	-	0
Brilliance	0	0	-	-	0
Somatom	0	0	-	-	0
DSCT	0	1	-	-	0
high pitch spiral	2	1	-	-	0
Dual source	20	12	-	-	0
Dual energy	5	3	-	-	0
Total by year	**43**	**25**	**-**	**1**	**0**
TOTAL	**69**				

n.b. no free content or full abstracts, therefore could only browse abstract titles in programme.

2010 = http://www.scct.org/annualmeeting/2010/Abstracts_Accepted.pdf
2009 = http://www.scct.org/annualmeeting/2009/2009PrelimProgram.pdf
2008 = no free access to programme or abstract lists.
*2007 = http://www.scct.org/annualmeeting/2007/meetingbrochure.pdf
2006 = http://www.scct.org/annualmeeting/meeting_brochure.pdf

*2007 = unable to search or copy within PDF, therefore browsed listings.

American Heart Association (AHA) (Internet): 2007-2010
Searched 22.3.11

2010 = http://circ.ahajournals.org/content/vol122/21_MeetingAbstracts/
2009 = http://circ.ahajournals.org/content/vol120/18_MeetingAbstracts/
2008 = http://circ.ahajournals.org/content/vol118/18_MeetingAbstracts/
2007 = http://circ.ahajournals.org/content/vol116/16_MeetingAbstracts/
2006 = unable to locate searchable abstracts

Search terms	**2010**	**2009**	**2008**	**2007**
"128 row*"	0	0	0	0
"256 row*"	1	1	1	3
"320 row*"	0	0	2	0
"640 row*"	3	0	0	0
"128 slice*"	3	1	0	0
"256 slice*"	0	0	0	1
"320 slice*"	9	2	3	0
"640 slice*"	0	0	0	0
detector*	25	25	29	26
Aquilion	4	6	1	0
Brilliance	0	2	2	4
Somatom	2	2	4	6
DSCT	1	3	8	9
"high pitch spiral"	1	1	0	0
"Dual source"	11	12	15	10
"Dual energy"	6	10	7	1
Total by year	**66**	**65**	**72**	**60**
TOTAL	**263**			

Cost-effectiveness search

Medline: 2000-2011/03/wk 2
Searched 18.3.11

1 economics/ (25965)
2 exp "costs and cost analysis"/ (154360)
3 economics, dental/ (1814)
4 exp "economics, hospital"/ (17009)
5 economics, medical/ (8379)
6 economics, nursing/ (3839)
7 economics, pharmaceutical/ (2194)
8 (economic$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (327719)
9 (expenditure$ not energy).ti,ab. (13900)
10 (value adj1 money).ti,ab. (18)
11 budget$.ti,ab. (14162)
12 or/1-11 (439089)
13 ((energy or oxygen) adj cost).ti,ab. (2243)
14 (metabolic adj cost).ti,ab. (578)
15 ((energy or oxygen) adj expenditure).ti,ab. (12794)
16 or/13-15 (15012)
17 12 not 16 (435668)
18 letter.pt. (707514)
19 editorial.pt. (270646)
20 historical article.pt. (271900)
21 or/18-20 (1237508)
22 17 not 21 (411802)
23 Somatom definition flash.ti,ab,ot,hw. (4)
24 DSCT.ti,ab,ot,hw. (250)
25 (Aquilion-1 or Aquilion-one).ti,ab,ot,hw. (9)
26 Brilliance ict.ti,ab,ot,hw. (1)
27 (Discovery ct750 or Discovery ct-750).ti,ab,ot,hw. (1)
28 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$).ti,ab,ot,hw. (2)
29 (320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$ or 256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).ti,ab,ot,hw. (130)
30 (128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).ti,ab,ot,hw. (42)
31 ('2' adj2 (energy or source$)).ti,ab,ot,hw. (2425)
32 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).ti,ab,ot,hw. (1160)
33 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (167)
34 modern cone-beam dual-source spiral.ti,ab,ot,hw. (1)
35 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (1)
36 or/23-35 (4014)
37 animals/ not (animals/ and humans/) (3467241)
38 36 not 37 (3093)
39 22 and 38 (124)
40 limit 39 to yr="2000 -Current" (86)

Costs filter:
Centre for Reviews and Dissemination. NHS EED Economics Filter: Medline (Ovid) monthly search [Internet]. York: Centre for Reviews and Dissemination; 2010 [cited

13.1.11]. Available from:
http://www.crd.york.ac.uk/crdweb/html/helpdoc.htm#MEDLINE_NHSEED

Medline In-Process Citations: 2000-2011/03/17
Medline Daily Update: 2000-2011/03/17
Econ filter + Somatom
Searched 18.3.11

1 economics/ (4)
2 exp "costs and cost analysis"/ (92)
3 economics, dental/ (0)
4 exp "economics, hospital"/ (8)
5 economics, medical/ (0)
6 economics, nursing/ (0)
7 economics, pharmaceutical/ (1)
8 (economic$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (22066)
9 (expenditure$ not energy).ti,ab. (661)
10 (value adj1 money).ti,ab. (2)
11 budget$.ti,ab. (1260)
12 or/1-11 (23355)
13 ((energy or oxygen) adj cost).ti,ab. (147)
14 (metabolic adj cost).ti,ab. (36)
15 ((energy or oxygen) adj expenditure).ti,ab. (513)
16 or/13-15 (674)
17 12 not 16 (23148)
18 letter.pt. (16125)
19 editorial.pt. (9820)
20 historical article.pt. (136)
21 or/18-20 (26064)
22 17 not 21 (22849)
23 Somatom definition flash.ti,ab,ot,hw. (0)
24 DSCT.ti,ab,ot,hw. (21)
25 (Aquilion-1 or Aquilion-one).ti,ab,ot,hw. (0)
26 Brilliance ict.ti,ab,ot,hw. (0)
27 (Discovery ct750 or Discovery ct-750).ti,ab,ot,hw. (0)
28 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$).ti,ab,ot,hw. (0)
29 (320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$ or 256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).ti,ab,ot,hw. (22)
30 (128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).ti,ab,ot,hw. (8)
31 ('2' adj2 (energy or source$)).ti,ab,ot,hw. (424)
32 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).ti,ab,ot,hw. (109)
33 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (22)
34 modern cone-beam dual-source spiral.ti,ab,ot,hw. (0)
35 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).ti,ab,ot,hw. (0)
36 or/23-35 (579)
37 animals/ not (animals/ and humans/) (1590)
38 36 not 37 (577)
39 22 and 38 (11)
40 limit 39 to yr="2000 -Current" (10)

Costs filter:
Centre for Reviews and Dissemination. NHS EED Economics Filter: Medline (Ovid) monthly search [Internet]. York: Centre for Reviews and Dissemination; 2010 [cited

13.1.11]. Available from:
http://www.crd.york.ac.uk/crdweb/html/helpdoc.htm#MEDLINE_NHSEED

Embase (OvidSP): 2000-2011/wk 11
Searched 21.3.11

1 health-economics/ (29992)
2 exp economic-evaluation/ (164874)
3 exp health-care-cost/ (158402)
4 exp pharmacoeconomics/ (135363)
5 or/1-4 (379713)
6 (econom$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (423085)
7 (expenditure$ not energy).ti,ab. (16910)
8 (value adj2 money).ti,ab. (886)
9 budget$.ti,ab. (17926)
10 or/6-9 (441343)
11 5 or 10 (667209)
12 letter.pt. (722150)
13 editorial.pt. (367790)
14 note.pt. (437051)
15 or/12-14 (1526991)
16 11 not 15 (597817)
17 (metabolic adj cost).ti,ab. (639)
18 ((energy or oxygen) adj cost).ti,ab. (2509)
19 ((energy or oxygen) adj expenditure).ti,ab. (14898)
20 or/17-19 (17385)
21 16 not 20 (593880)
22 animal/ or animal experiment/ (3061249)
23 (rat or rats or mouse or mice or murine or rodent or rodents or hamster or hamsters or pig or pigs or porcine or rabbit or rabbits or animal or animals or dogs or dog or cats or cow or bovine or sheep or ovine or monkey or monkeys).mp. (4692356)
24 or/22-23 (4692356)
25 exp human/ or human experiment/ (12289869)
26 24 not (24 and 25) (3767804)
27 21 not 26 (568041)
28 Somatom definition flash.mp. (12)
29 DSCT.mp. (352)
30 (Aquilion-1 or Aquilion-one).mp. (22)
31 Brilliance ict.mp. (4)
32 (Discovery ct750 or Discovery ct-750).mp. (2)
33 (640row$ or 640-row$ or 640-detect$ or 640slice$ or 640 slice$ or 128row$ or 128-row$ or 128-detect$ or 128slice$ or 128 slice$).mp. (80)
34 (320row$ or 320-row$ or 320-detect$ or 320slice$ or 320 slice$ or 256row$ or 256-row$ or 256-detect$ or 256slice$ or 256 slice$).mp. (261)
35 ('2' adj2 (energy or source$)).mp. (2503)
36 (Dual$ adj2 (energy or source$) adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computed or tomograph$)).mp. (1500)
37 (High definition adj3 (CT or scan$ or DSCT or imag$ or multidetect$ or multi-detect$ or computer or tomograph$)).mp. (218)
38 modern cone-beam dual-source spiral.mp. (1)
39 (high pitch dual spiral adj3 (CT or scan$ or imag$ or technique$ or protocol$ or DSCT or multidetect$ or multi-detect$ or computer or tomograph$)).mp. (1)
40 or/28-39 (4631)
41 27 and 40 (166)
42 limit 41 to yr="2000 -Current" (132)

Costs filter:
Centre for Reviews and Dissemination. NHS EED Economics Filter: Embase (Ovid) weekly search [Internet]. York: Centre for Reviews and Dissemination; 2010 [cited 17.3.11]. Available from: http://www.crd.york.ac.uk/crdweb/html/helpdoc.htm#embase

Paediatric Economic Database Evaluation (PEDE) (Internet): 2000-2009
http://pede.ccb.sickkids.ca/pede/search.jsp
Searched 21.3.11

Searched 'Title, Abstract, or Keywords', 2000-2009

Search term: 'Title, Abstract, or Keywords'	**Records retrieved**
high definition	0
Somatom	0
DSCT	0
Aquilion	0
brilliance	0
Discovery	0/3
Rows	0
Row	0/1
Slice	0
Slices	0
Detector	0/2
Detectors	0
dual source	0
dual sources	0
dual energy	0
modern cone-beam	0
high pitch dual spiral	0
2 source	0
2 sources	0
2 energy	0
Total	**0**

PEDE search retrieved **0** records.

Health Economics Evaluation Database (HEED) (Internet): up to 2011/03/21
http://onlinelibrary.wiley.com/book/10.1002/9780470510933
Searched 21.3.11

Compound search, (all data), 2000-2011

high definition OR Somatom OR DSCT OR Aquilion OR brilliance
OR
Discovery ct750 OR Discovery ct-750
OR
row OR rows OR detector* OR slice*
OR
dual source OR dual energy OR dual sources
OR
modern cone-beam dual-source spiral
OR
high pitch dual spiral
OR
'2 energy' OR '2 source' OR '2 sources'

HEED search retrieved 18 records.

Guidelines search

GIN: International Guidelines Library
http://www.g-i-n.net
2005-2011/03/16
Searched 16.3.11

Limited to 2005-2011, English language only.

Terms searched	**Hits**
Free-text: angiogra*	7
Free-text: arteriogra*	0
Free-text: cardiac AND catheter*	6
Free-text: coronary AND catheter*	3
Total (prior to deduplication)	**16**

National Guidelines Clearinghouse (Internet)
http://www.guideline.gov/
Searched 16.3.11

Advanced search

Terms searched	**Hits**
((catheter* or coronary or cardiac) and (angiogra* or arteriogra*)) or ((coronary or cardiac) and (catheter*))	**138**

National Institute for Health and Clinical Excellence (NICE) Guidance (Internet)
http://guidance.nice.org.uk/
Searched 16.3.11

Terms searched	**Hits**
Angiography	18
Angiogra*	0
Arteriogra*	0
Arteriography	0
catheter*	32/97
catheterisation	7/18
catheterization	0
Total	**57**

TRIP database (Internet)
http://www.tripdatabase.com/
Searched 16.3.11

Limited to Guidelines only; 2005-2011

Terms searched	**Hits**
(Angiography or Arteriography) from:2005 to:2011	118

Health Technology Assessment (HTA) (Internet): 2005-2011
http://www.york.ac.uk/inst/crd/
Searched 16.3.11

1 (coronary NEAR angiogra*) OR (coronary NEAR arteriogra*) OR (coronary NEAR catheter*) 391
2 (cardiac NEAR angiogra*) OR (cardiac NEAR arteriogra*) OR (cardiac NEAR catheter*) 246
3 (catheter* NEAR angiogra*) OR (catheter* NEAR arteriogra*) 59
4 #1 or #2 or #3 RESTRICT YR 2005 2011 250

HTA search retrieved **34** references.

Appendix 2: Study specific guide to completion of QUADAS-2

The version of QUADAS-2 used in this assessment included only the risk of bias components, as it was considered that the inclusion criteria matched the review question and that questions of applicability were, therefore, not relevant.

Before starting the risk of bias assessment, we considered the relevance of each signalling question to our review, as well as the potential need for additional questions. Further criteria were then defined, as needed, to ensure consistent application of signalling questions and to help in the judgement of the risk of bias. Many signalling questions weren't further specified and the answer was judged to be "yes" if it was clearly reported in the study. If the answer to a signalling question was not clearly reported the question was judged as "unclear" unless specified differently. "No" was answered if was clear from the reporting that an aspect was not fulfilled. An additional question (question 3) was added to Domain 2 'index test' to record the potential bias introduced where studies include multiple measurements per patient. Details of the assessment criteria used are reported below.

DOMAIN 1: PATIENT SELECTION

Question 1: Was a consecutive or random sample of patients enrolled?

- "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" ➔high risk of bias

Question 2: Was a case-control design avoided?

- "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" ➔high risk of bias

Question 3: Did the study avoid inappropriate exclusions?

- "no" for < 10% of patients or "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" for ≥ 10% of patients ➔high risk of bias

DOMAIN 2: INDEX TEST

Question 1: Were the index test results interpreted without knowledge of the results of the reference standard?

Question 2: Did the study pre-specify the threshold for a positive result?

Question 3: Did the study avoid using multiple data sets per patient (reporting of per segment data only)?

The same criteria applied to each of the 3 signalling questions:

- "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" ➔high risk of bias

DOMAIN 3: REFERENCE STANDARD

Question 1: Is the reference standard likely to correctly classify the target condition? the use of a reference standard, likely to correctly classify the target

condition (i.e. coronary angiography) was an inclusion criterion, hence the answer to this question was always "yes" ➔ low risk of bias

Question 2: Were the reference standard results interpreted without knowledge of the results of the index test?

- "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" ➔high risk of bias

DOMAIN 4: FLOW AND TIMING

Question 1: Was there an appropriate interval between index test and reference standard?

The time interval between index and reference standard had to be $\leq$ 3 months in order to be judged as "adequate".

- "no" but for < 10% of patients or "yes" ➔low risk of bias
- The answer was judged to be "unclear" if the time interval was not reported or if it was unclear what proportion of patients had an inadequate time interval between index test and reference standard ➔unclear risk of bias
- "no" for $\geq$ 10% of patients ➔high risk of bias

Question 2: Did all patients receive a reference standard?

- "no" but only for < 10% of patients or "yes" ➔low risk of bias
- "unclear" ➔unclear risk of bias
- "no" for $\geq$10% of patients ➔high risk of bias

Question 3: Did patients receive the same reference standard?

As invasive coronary angiography was the only reference standard allowed in the inclusion criteria this item was always answered with "yes" ➔ low risk of bias

Question 4: Were all patients included in the analysis?

- "no" but for < 10% of patients or "yes" ➔low risk of bias
- "yes", or < 10% of patients excluded, but unclear how exclusion of non-diagnostic segments may have affected per patient results ➔unclear risk of bias
- "unclear" ➔unclear risk of bias
- "no" for $\geq$ 10% of patients ➔high risk of bias

The following criteria were used to reach a per domain judgement of risk of bias:

- If at least one of the signalling questions of a domain had an answer associated with a high risk of bias the domain was judged to have a high risk of bias.

- If the answer to any of the signalling questions was "unclear" and the answers to the remaining questions were yes, the risk of bias was judged to be unclear.

- The answer to all the signalling questions had to be yes in order for the domain to be judged as having a low risk of bias.

Appendix 3: Quality assessment – QUADAS-2 results

Completed QUADAS-2 assessments for all included studies:

STUDY ID: Alkadhi 2008[44]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with chest pain, negative or equivocal stress test, intermediate risk of CAD and stable clinical conditions referred for ICA.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK: LOW

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers who were blinded to clinical information and reference standard results. Disagreements resolved by consensus. Both per patient and per segment data were reported, non-diagnostic segments were classified as positive.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

A. Risk of Bias

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one experienced observer, who was aware of clinical history but blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

A. Risk of Bias

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients received both tests

Describe the time interval between index and reference standard and any actions taken:
10 ± 6 days (median 8 days, range 1-22).

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Brodoefel 2008a[46]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients scheduled for ICA for suspected CAD or CAD progression. Seven patients with previous bypass surgery were excluded. Total number of included patients: 100, HHR 30, HCS 47.

- Was a consecutive or random sample of patients enrolled? Unclear
- Was a case-control design avoided? Yes
- Did the study avoid inappropriate exclusions? Unclear

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two observers who were blinded to clinical information and reference standard results, decisions reached by consensus. Data were reported by segment only and it was not clear how non-diagnostic segments were classified. Where there were multiple lesions per segment, the segment was classified by the worst stenosis.

- Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- Did the study pre-specify the threshold for a positive result? Yes
- Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one observer, who was blind to CT results.

- Is the reference standard likely to correctly classify the target condition? Yes
- Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:

Initial reasons for exclusion: refusal/withdrawal of consent (8), impaired renal function (2), previous bypass surgery (7), acute coronary syndrome necessitating immediate invasive coronary angiography (1). One patient with a normal CTA withdrew consent and didn't receive the reference standard (excluded after enrolment). All other patients received both tests. However, it was not clear whether non-diagnostic segments were included in the analyses

Describe the time interval between index and reference standard and any actions taken:

All CT studies were performed the day before ICA

- Was there an appropriate interval between index test and reference standard? Yes
- Did all patients receive a reference standard? No
- Did patients receive the same reference standard? Yes
- Were all patients included in the analysis? No

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Brodoefel 2008b[45]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients scheduled for ICA for suspected CAD or CAD progression. Thirteen patients with bypass surgery were excluded. Total number of included patients: 125, obese patients: 44. It was not clear how many, if any, of the 13 excluded patients were in the obese category.

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two observers who were blinded to clinical information and reference standard results, decisions reached by consensus. Data were reported by segment only and it was not clear how non-diagnostic segments were classified. Where there were multiple lesions per segment, the segment was classified by the worst stenosis.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one observer, who was blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index

test and/or reference standard or who were excluded from the 2x2 table:
Of 145 screened patients 20 were excluded due to refusal of consent (10), withdrawal of consent (2), impaired renal function (3), previous bypass surgery (13), acute coronary syndrome necessitating immediate ICA (2).
All other patients received both tests and all segments appeared to have been included in the analysis, however, it was unclear how non-diagnostic segments were classified.

Describe the time interval between index and reference standard and any actions taken:
All CT studies were performed the day before CT

- Was there an appropriate interval between index test and reference standard? Yes
- Did all patients receive a reference standard? Yes
- Did patients receive the same reference standard? Yes
- Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: de Graaf 2010[43]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients with previous stent implantation, who were being assessed for recurrent chest pain and who received both CT and ICA. Some other 'difficult to image' subgroups were excluded; in particular 3 patients with increased heart rate and contraindications to β-blockers were excluded (total included: 53 patients).

- Was a consecutive or random sample of patients enrolled? Unclear
- Was a case-control design avoided? Yes
- Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two observers who were blinded to reference standard results, decisions reached by consensus. Data were reported per stent and per patient and non-diagnostic stents and patients with at least one non-diagnostic stent were classified as positive. Overlapping stents were classified as one stent.

- Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- Did the study pre-specify the threshold for a positive result? Yes
- Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one observer, who was blind to CT results.

- Is the reference standard likely to correctly classify the target condition? Yes
- Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients received both tests and all segments and patients were included in the analyses.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was 14±21 days and no interventions or changes to clinical condition occurred between examinations.

- Was there an appropriate interval between index test and reference standard? Yes
- Did all patients receive a reference standard? Yes
- Did patients receive the same reference standard? Yes
- Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: LaBounty 2010[41]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Abstract only, consecutive patients, stented patients likely to be a subgroup.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Unclear

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two blinded observers, disagreements resolved by a third observer. Only per stent data were extractable.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one blinded observer.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
Analyses were 'intention to diagnose', no further details reported.

Describe the time interval between index and reference standard and any actions taken:
No details reported.

❖ Was there an appropriate interval between index test and reference standard?	Unclear
❖ Did all patients receive a reference standard?	Yes
❖ Did patients receive the same reference standard?	Yes
❖ Were all patients included in the analysis?	Yes

Could the patient flow have introduced bias? **RISK: UNCLEAR**

STUDY ID: Leber 2007[47]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with intermediate likelihood of CAD, referred for coronary angiography.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK: LOW

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two investigators assessed CT, no details reported. CT was done before ICA. Data were reported per segment and per patient.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
No details of angiography interpretation were reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
One Patient was excluded from analysis due to non-diagnostic CT imaging. Non-diagnostic segments (n=16) were excluded from the analysis, but it was not clear how many of these were in patients with HHR and/or AF. If all non-diagnostic segments were in patients with HHR and/or AF the maximum proportion of excluded segments would be 2.5%. In addition, it was not clear

how non-diagnostic segments were distributed between patients and hence how their exclusion may have affected per patient results.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was 1 day.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? No

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Lin 2010[48]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Retrospective analysis of a selection of patients from a consecutive series, only patients who had received both CT and ICA were included. Previous coronary stent implantation or bypass were exclusion criteria. The stated inclusion criteria suggested that only patients with positive CT examinations were included, but this was not consistent with the reported results.

- ❖ Was a consecutive or random sample of patients enrolled? No
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Unclear

Could the selection of patients have introduced bias? RISK: HIGH

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers, blinding not reported.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
ICA, interpreted by one observer, who was blind to CT results. Data were recorded per patient, per segment and per vessel.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:

Nine patients were excluded because the time between index test and reference standard was > 3 months. The rest of the included patients received both tests and all segments and patients appear to have been included in the analyses.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was <3 months.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Marwan 2010[49]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with AF. 10 patients with rapid AF (HR > 100bpm) unresponsive to β-blockers or calcium channel blockers and 14 patients with difficulty in holding their breath were excluded.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: HIGH

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers, blinding not reported, but performed before ICA. Both per patient and per segment data were reported and non-diagnostic segments were classified as positive.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Evaluated by independent observer, no blinding reported, performed after CT

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All included patients received both tests and all segments and patients appear to have been

included in the analyses.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was <24 hours.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Meng 2009[50]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with suspected CAD. Patients with previous stent implantation or bypass surgery were excluded. Not reported if any patients met exclusion criteria.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers, blind to reference standard results and clinical details. Only segment or per artery data were reported for difficult to image patient groups.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
One experienced cardiologist who was not involved in CT interpretation.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
Non-diagnostic segments were excluded from the analyses (25/1558 for all patients), but it was not clear how many non-diagnostic segments were in the HHR and HCS groups. If all non-

diagnostic segments were in the smallest group (HCS), maximum possible proportion would be 7%. 1 patient was excluded but it is not whether this patient was in either the HHR (n=50) or HCS (n=17) groups.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was <24 hours.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? No

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Oncel 2007[51]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with AF and suspected CAD. Exclusion criteria were previous stent implantation or bypass graft, inability to follow breath-hold instructions, but no patients were excluded on the basis of these criteria.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK: LOW

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers, blind to reference standard results. Data were reported per patient, per artery, and per segment.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
One experienced cardiologist who was blinded to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
Non-diagnostic segments were excluded from the analyses (13/225), approximately 6% of total.

It was not clear how non-diagnostic segments were distributed between patients and hence how their exclusion may have affected per patient results.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was 1 day.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Oncel 2008[52]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with suspected in-stent re-stenosis. Patients with inability to breath-hold were excluded. Numbers not reported.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Unclear

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Two independent observers, blind to reference standard results and clinical data. Data were reported per stent and per patient.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:

One experienced cardiologist who was blinded to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients and stents appeared to have been included in the analysis.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was 1 day.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Pflederer 2009[53]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:

Consecutive patients with suspected in-stent re-stenosis. Lesions with > 1 implanted stent (≥ 2 stents implanted in bifurcation lesions, contiguous or slightly overlapping stents, and stent-in-stent implantation, any stent diameter < 3.0 mm, and stents implanted in bypass grafts (31 patients) were excluded as were patients with AF (n=6) with a total of 112 patients included.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: HIGH

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:

Two experienced observers jointly classified images; blinding was not reported. Data were reported per stent and per patient and non-diagnostic stents were classified as positive for the per-patient analysis.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:

One experienced cardiologist who was blinded to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index

test and/or reference standard or who were excluded from the 2x2 table:
All patients who met the inclusion criteria appear to have been included in the analysis. Fifteen stents were not included in the analysis; it was unclear how these were distributed between patients and hence how the per patient analysis may have been affected.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was 1 day.

- Was there an appropriate interval between index test and reference standard? Yes
- Did all patients receive a reference standard? Yes
- Did patients receive the same reference standard? Yes
- Were all patients included in the analysis? Unclear

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Pflederer 2010[37]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Previously revascularised patients who were scheduled for ICA.

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK:UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Abstract only, no detail of interpretation reported. Data reported per stent and per bypass graft.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Abstract only, no detail of interpretation reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients appear to have been included in the analyses.

Describe the time interval between index and reference standard and any actions taken:
Not reported.

- ❖ Was there an appropriate interval between index test and reference standard? Unclear
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Pugliese 2011[54, 55]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients with chest pain and previous stent implantation. Some other difficult to image subgroups were excluded (6 for irregular heart rhythm/AF, total included 100).

- Was a consecutive or random sample of patients enrolled? Unclear
- Was a case-control design avoided? Yes
- Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Index test was interpreted blind to the reference standard results. Data were reported per stented lesion

- Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- Did the study pre-specify the threshold for a positive result? Yes
- Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Two experienced readers evaluated the DSCT studies independently; the readers were unaware of the findings of conventional angiography.

- Is the reference standard likely to correctly classify the target condition? Yes
- Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
133 patients with chest pain after stent implantation were referred for conventional angiography. 33 were excluded: 4 because of renal impairment, 3 due to contrast allergy, 6 due to

AF/irregular heart rate, 20 didn't give informed consent. All included patients/stented lesions appear to have been included in the analysis. Non-diagnostic segments were classified as positive.

Describe the time interval between index and reference standard and any actions taken:
NR

- ❖ Was there an appropriate interval between index test and reference standard? Unclear
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Rist 2009[56]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients with chronic AF, Referred for CT angiography.

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Scans interpreted by two observers, blind to clinical information and other test results. Data were reported per segment and per patient.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Interpreted by a single observer blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
21/68 participants received the reference standard; all of these patients appear to have been included in the analysis. Non-diagnostic segments (n=81) were excluded and it was not clear how many of these were in patients included in the diagnostic accuracy analysis (maximum possible proportion 22.3%). The selection criteria for the 21 patients with the reference standard

were unclear.

Describe the time interval between index and reference standard and any actions taken:
Mean time between CT and ICA was 20 ± 26 days (range 1 to 97 days).

- ❖ Was there an appropriate interval between index test and reference standard? — Unclear
- ❖ Did all patients receive a reference standard? — No
- ❖ Did patients receive the same reference standard? — Yes
- ❖ Were all patients included in the analysis? — No

Could the patient flow have introduced bias? **RISK: HIGH**

STUDY ID: Rixe 2009[38]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with suspected CAD and AF.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Yes

Could the selection of patients have introduced bias? RISK:LOW

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Abstract only, no detail of interpretation reported. Data reported per patient and per segment. Data were evaluated by two experts in consensus. Un-assessable segment were considered to be positive.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Abstract only, no detail of interpretation reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients appear to have been included in the analyses; non-diagnostic segments were classified as positive.

Describe the time interval between index and reference standard and any actions taken:
Not reported.

- ❖ Was there an appropriate interval between index test and reference standard? — Unclear
- ❖ Did all patients receive a reference standard? — Yes
- ❖ Did patients receive the same reference standard? — Yes
- ❖ Were all patients included in the analysis? — Yes

Could the patient flow have introduced bias? **RISK: UNCLEAR**

STUDY ID: Ropers 2007[42]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients referred for coronary angiography for suspected CAD. Patients with HHR were included, but patients not in sinus rhythm and patients with previous stent implantation or bypass graft were excluded (numbers not reported).

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST
If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:

Scans interpreted by one observer, blind to clinical information and reference standard results. Data were reported per segment, per artery and per patient.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:

Interpreted by a separate single observer, blinding not reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:

All patients were included in the analyses, non-diagnostic segments/arteries/patients were classified as positive.

Describe the time interval between index and reference standard and any actions taken:
Mean time between CT and ICA was 1.4 days (range 0 to 11 days).

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Ropers 2008[40]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients with previous bypass graft. Abstract only, no further details reported. For the graft based analysis only the patent grafts were assessed for stenosis by the authors. With the information given this could be corrected for the graft based results but it is unclear if and how this affected the patient and the segment based analysis.

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? Unclear

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Abstract only, no details of interpretation reported.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Abstract only, no details of interpretation reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients were included in the per patient and bypass graft analyses; non-diagnostic segments and occluded grafts were excluded from the per segment analysis. I was not clear how these

were distributed between patients and therefore how the per patient analysis may have been affected.

Describe the time interval between index and reference standard and any actions taken:
Time between CT and ICA was not reported.

- ❖ Was there an appropriate interval between index test and reference standard? Unclear
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Scheffel 2006[57]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients who had undergone ICA for suspected CAD. Patients with irregular heart rates were not excluded. Patients with previous stent implantation or bypass graft were excluded (numbers not reported).

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Scans interpreted by two independent observers, blinding not reported. Data were reported per segment.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Interpreted by a separate single observer, blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients/segments appear to have been included in the analyses, though it was not clear how non-diagnostic segments were classified

Describe the time interval between index and reference standard and any actions taken:
Mean time between CT and ICA was 14±9 days.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Tsiflikas 2010[58, 59]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Patients without stable sinus rhythm, scheduled for ICA. Seventeen stented segments were excluded (total included 536).

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST
If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Index test interpreted blind to reference standard results and clinical information. Only per segment data were available.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Interpreted blind to index test.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients who met the inclusion criteria received the index test and reference standard, but not all segments appear to have been included in the analysis (unclear how non-diagnostic segments were classified). It was not clear how the possible exclusion of segments may have

affected per patient analysis. Segments with very poor image quality or stents were excluded and there were inconsistencies in the numbers of segments reported.

Describe the time interval between index and reference standard and any actions taken:
Examination with Quantitative coronary angiography within 1 day after DSCT.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Unclear

Could the patient flow have introduced bias? **RISK: UNCLEAR**

STUDY ID: Van Mieghem 2007[39]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Symptomatic patients scheduled for invasive angiography, who had previous PCI with large diameter (≥3 mm) stents). Patients with previous bypass graft were excluded (numbers not reported).

- ❖ Was a consecutive or random sample of patients enrolled? Unclear
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
No details of how index test results were interpreted were reported.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: UNCLEAR

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
No details of how reference standard results were interpreted were reported.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Unclear

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: UNCLEAR

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
All patients appeared to have been included in the analysis. Both in-stent re-stenoses and native vessel stenoses were included in the analysis.

Describe the time interval between index and reference standard and any actions taken:
Not reported.

- ❖ Was there an appropriate interval between index test and reference standard? Unclear
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: UNCLEAR

STUDY ID: Weustink 2009a[61]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with suspected or known CAD. Patients with AF (n=6) or previous revascularisation (n=103), i.e. total of 109 patients (10.5%) were excluded.

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: HIGH

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Observers were blinded for reference standard.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Interpreted blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:

1143 consecutive patients were enrolled that met the inclusion criteria. 155 were excluded because they gave no informed consent (52) or had a CABG 103. Of the 988 patients referred for CTCA 61 were excluded based on the exclusion criteria (35 patients due to renal dysfunction, 12 with known contrast allergy, 6 AF with fast ventricular response and 8 due to

scan failure. Of the 927 patients still in the study 444 (48%) had the reference standard. It was not reported how those patients were selected.

Describe the time interval between index and reference standard and any actions taken:
The reference standard was performed within 4 weeks before or after CT.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? No
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? No

Could the patient flow have introduced bias? RISK: HIGH

STUDY ID: Weustink 2009b[60]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Symptomatic patients after revascularisation. Patients in AF were excluded (n=2 (3.3%)).

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: LOW

DOMAIN 2: INDEX TEST

If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
CT scans interpreted by two observers. The radiologists were blinded to the results of the reference standard. Full accuracy data are only available for segment based data.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Unclear
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? No

Could methods used to conduct or interpret the index test have introduced bias? RISK: HIGH

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:
Interpreted by one cardiologist, blind to CT results.

- ❖ Is the reference standard likely to correctly classify the target condition? **Yes**
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? **Yes**

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

A. Risk of Bias

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:
Of 58 consecutive patients after surgical revascularisation 6 were excluded: 1 due to a known allergy to iodinated contrast material, 2 due to impaired renal function, 2 due to atrial fibrillation, and 1 due to logistic inability to undergo a CT scan before ICA.

Describe the time interval between index and reference standard and any actions taken:
ICA was performed within 4 weeks of CTCA.

- ❖ Was there an appropriate interval between index test and reference standard? Yes
- ❖ Did all patients receive a reference standard? Yes
- ❖ Did patients receive the same reference standard? Yes
- ❖ Were all patients included in the analysis? Yes

Could the patient flow have introduced bias? RISK: LOW

STUDY ID: Zhang 2010[62]

DOMAIN 1: PATIENT SELECTION

Describe methods of patient selection:
Consecutive patients with suspected CAD who underwent both dual-source CTCA and CAG and gave informed consent were included. Patients not in sinus rhythm, obese patients and patients with high coronary calcium were not excluded, but patients with previous stent (4) or bypass surgery (none) were excluded (total included: 113, HCS: 12, HHR: 70); it was unclear how the 4 excluded patients were distributed between these two groups

- ❖ Was a consecutive or random sample of patients enrolled? Yes
- ❖ Was a case-control design avoided? Yes
- ❖ Did the study avoid inappropriate exclusions? No

Could the selection of patients have introduced bias? RISK: UNCLEAR

DOMAIN 2: INDEX TEST
If more than one index test was used, please also complete the comparative study domain

Describe how the index test results were interpreted:
Interpreted blind to reference standard.

- ❖ Were the index test results interpreted without knowledge of the results of the reference standard? Yes
- ❖ Did the study pre-specify the threshold for a positive result? Yes
- ❖ Did the study avoid using multiple data sets per patient (reporting of per segment data only)? Yes

Could methods used to conduct or interpret the index test have introduced bias? RISK: LOW

DOMAIN 3: REFERENCE STANDARD

Describe the reference standard and how it was conducted and interpreted:

Interpreted blind to CT results

- ❖ Is the reference standard likely to correctly classify the target condition? Yes
- ❖ Were the reference standard results interpreted without knowledge of the results of the index test? Yes

Could methods used to conduct or interpret the reference standard have introduced bias? RISK: LOW

DOMAIN 4: FLOW AND TIMING

Draw a flow-chart for the study *or* describe any patients who did not receive the index test and/or reference standard or who were excluded from the 2x2 table:

Information partially contradictory
121 patients with suspected CAD gave informed consent and had both CTCA and CAG. 6 patients were excluded because they didn't meet the inclusion criteria (4 because of stent follow-up, 1 who didn't receive a CAG because of occluded iliac arteries, 1 due to chest pain during examination). 113 patients were included (for 2 patients information on why they were excluded from the study was lacking.
Describe the time interval between index and reference standard and any actions taken:
Range: 1-155 days, Mean 18 +/- 29 days.

- Was there an appropriate interval between index test and reference standard? Unclear
- Did all patients receive a reference standard? Unclear
- Did patients receive the same reference standard? Yes
- Were all patients included in the analysis? No

Could the patient flow have introduced bias? RISK: UNCLEAR

Appendix 4: Data extraction tables

Details of the methods and interpretation of the index test (assessed technology) and reference standard used in included studies

Study ID	Index test (assessed technology) details	Reference standard details
Alkadhi 2010[44]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – 46 Patients continued their baseline treatment with β-blockers, no additional medication for heart-rate control was given. Contrast agent – 80 ml of iodixanol (Visipaque 320, 320 mg/ml, GE Heathcare, Buckinghamshire, UK), i.v., flow rate of 5 ml /s, followed by 30 ml saline. Scans performed from tracheal bifurcation to diaphragm. Scan parameters – detector collimation 2 x 32 x 0.6 mm^3, slice collimation 2 x 64 x 0.6 mm^3, gantry rotation time 330 ms, pitch 0.2–0.5, tube current time product 350 mAs per rotation, and tube potential 120 kV. Interpretation – Two independent observers who were blinded to clinical history and reference standard results interpreted all images. Both readers rated image quality as diagnostic or non-diagnostic. Non-diagnostic segments were classified as false positive. Positive stenosis was defined as diameter	Catheter angiography – 'standard techniques', with at least two views in different planes for each artery (no further details reported). Interpretation – One experienced observer who was aware of clinical history, but blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	reduction >50%, measured with an electronic calliper tool. Any disagreements between observers were resolved by consensus.	
Brodoefel 2008b[45]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – 94 patients Had baseline treatment with β-blockers. No additional β-blockers were given. Contrast agent – 80 ml of iomeprol (Imeron 400, Altana, Konstanz, Germany), i.v., flow rate of 5 ml /s, followed by 60 ml chaser bolus. Scan parameters – collimation 32 x 0.6 mm, slice acquisition 64 x 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.43, tube current 400 mA per rotation, and tube voltage 120 kV. Interpretation – Two experienced readers, who were blinded to reference standard results and clinical information, assessed images by consensus. Positive stenosis was defined as diameter reduction ≥50%. Where there were multiple lesions per segment, the segment was classified by the worst stenosis.	Catheter angiography – transfemoral and transradial Judkins technique, ≥2 projections for the right coronary artery and ≥6 projections for the left coronary artery, performed by two experienced cardiologists. Interpretation – One observer who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction ≥50%.
Brodoefel 2008a[46]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – 75% Of the total patient	Catheter angiography – transfemoral and transradial Judkins technique, ≥2 projections for the right coronary artery and ≥6 projections for the left coronary artery, preformed by two

Study ID	Index test (assessed technology) details	Reference standard details
	population (not reported for HHRor HCS subgroups) were routinely taking β-blockers, no additional β-blockers were administered to any patient. Contrast agent – 80 ml of iomeprol (Imeron 400, Altana, Konstanz, Germany), i.v., flow rate of 5 ml /s, followed by 60 ml chaser bolus. Scan parameters – collimation 32 x 0.6 mm, slice acquisition 64 x 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.43, tube current 400 mA per rotation, and tube voltage 120 kV. Interpretation – Two experienced observers, who were blinded to reference standard results and clinical information, assessed images by consensus. Positive stenosis was defined as diameter reduction ≥50%. Where there were multiple lesions per segment, the segment was classified by using the worst stenosis.	experienced cardiologists. Interpretation – One observer who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction ≥50%. Where there were multiple lesions per segment, the segment was classified by using the worst stenosis.
de Graaf 2010[43]	CT scanner – Aquilion ONE, Toshiba Medical Systems, Otawara, Japan. Use of β-blockers – Metoprolol was administered orally, 1 hour before data acquisition, to all patients with HR >65 bpm, unless contraindicated. Patients with a heart rate between 65 and 75 bpm received 50mg	Catheter angiography – 'standard techniques,' no further details reported Interpretation – One experienced observer, blinded to CT results. Positive stenosis was defined as lumen reduction ≥50%%, or the presence of significant stent edge (<5 mm from edge) stenosis in the view with the most

Study ID	Index test (assessed technology) details	Reference standard details
	metolprolol, patients with HR ≥ received 100mg metoprolol. Contrast agent – Tri-phasic injection of 60-80 ml of iomeprol (Iomeron 400, Bracco, Milan, Italy), flow rate of 5 or 6 ml /s, followed by 20 ml of 50% contrast/saline mix and finally 25 mL saline at 3 ml /s. Scan parameters – gantry rotation time 350 ms, tube current 400 to 580 mA (dependent upon BMI), and tube voltage 100 to 135 kV (dependent upon BMI). All images were acquired during a 5s breath hold. Interpretation – Two experienced observers, who were blinded to reference standard results assessed images by consensus. Overlapping stents were considered to represent a single stent. Significant in-stent re stenosis was defined as lumen reduction ≥50%, or the presence of significant stent edge (<5 mm from edge) stenosis. Reduced run-off distal to the stent was also judged to suggest in-stent stenosis. In patient-based analysis the CTA was deemed non-diagnostic if patients had one or more un-interpretable stents; non-diagnostic stents were classified as positive.	severe luminal narrowing.
LaBounty 2010[41]	CT scanner – 128-slice, dual source,	Catheter angiography – no details reported

Study ID	Index test (assessed technology) details	Reference standard details
	manufacturer not specified. Use of β-blockers – NR Contrast agent – no details reported Scan parameters – no details reported Interpretation – Two blinded, experienced observers interpreted images and disagreements were resolved by a third observer. Positive stenosis was defined as diameter reduction ≥50%.	Interpretation – blinded, experienced core laboratory. Positive stenosis was defined as diameter reduction ≥50%.
Leber 2007[47]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – No patients received β-blockers prior to imaging. Contrast agent – body weight adapted (1.25 ml/kg Ultravist 370, Schering, Berlin, Germany) i.v. at a constant rate to give an injection time of 20s, followed by 100 ml saline at 5 ml /s. Scan parameters – collimation 0.6 mm, 64 slices, gantry rotation time 330 ms, pitch 0.2–0.44, tube current 560 mA per rotation, and tube voltage 120 kV. Interpretation – Two independent	Catheter angiography – Judkins approach using 4F catheters and acquiring standard projections. Interpretation – No details of who interpreted angiograms were reported. Positive stenosis was defined as diameter reduction >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	investigators assessed the DSCT images. Positive stenosis was defined as diameter reduction >50%.	
Lin 2010[48]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – No patients received β-blockers prior to imaging. Contrast agent – continuous injection of 50 to 70 ml of iopamidol (Iopamiro 370 mg I/ml, Bracco, Milano, Italy) according to patient size, flow rate of 5 to 7 ml/s, followed by 50 ml saline. Scan parameters – collimation 32 x 0.6 mm, slice acquisition 64 x 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.43, tube current 400 mAs per rotation, and tube voltage 120 kV. Interpretation – All images were evaluated and classified by two independent readers. Positive stenosis was defined as diameter reduction >50%.	Catheter angiography – recorded in three orthogonal projections after intracoronary injection of 100 mg nitroglycerine. Interpretation – single observer, blind to CT results. Stenotic severity was defined as narrowest diameter divided by diameter of the nearest distal normal segment. Positive stenosis was defined as diameter reduction >50%.
Marwan 2010[49]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – 46 (77%) Of participants were on long-term β-blockers. In addition, 3 (5%) participants received 100 mg atenolol orally, before imaging, and 21 (35%) received	Catheter angiography – 'standard projections' after intracoronary injection of 0.2 mg isosorbide dinitrate. Interpretation – Projections were evaluated offline by an independent observer. Stenosis was determined from two orthogonal views.

Study ID	Index test (assessed technology) details	Reference standard details
	i.v. metoprolol (5-20 mg) before scanning. 8 patients (13.3) received diltiazem. Contrast agent – 60 to 110 ml of iopromide (370 mg iodine/ ml, Ultravist 370, Schering, Berlin, Germany), flow rate of 6 ml /s, followed by 50 ml saline. Scan parameters – collimation 2 x 64 x 0.6 mm, rotation time 330 ms, pitch 0.2–0.43, tube current 360 mAs or 400 mAs (dependent upon patient BMI), and tube voltage 100 or 120 kV (dependent upon patient BMI). Interpretation – All images were jointly assessed by two readers, each with >3 years experience in coronary CT angiography. Positive stenosis was defined as diameter reduction >50%. Patients with one or more un-evaluable vessel were classified as positive because the presence of stenosis could not be ruled out. Patients in whom all vessels were evaluable and no significant stenosis was found were classified as negative.	Positive stenosis was defined as diameter reduction ≥50%.
Meng 2009[50]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – no β-blockers were administered for scanning.	Catheter angiography – standard Judkins technique, ≥2 projections for the right coronary artery and ≥6 projections for the left coronary artery.

Study ID	Index test (assessed technology) details	Reference standard details
	Contrast agent – continuous injection of 80 ml bolus of iohexol (350 mg iodine/ ml, Amersham Heath, Princeton, NJ), flow rate of 5 ml/s, followed by 50 ml saline. Scan parameters – detector collimation 32 x 0.6 mm, slice acquisition 64 x 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.5, tube current 400 mAs per rotation, and tube voltage 120 kV. Interpretation – All images were independently assessed by two observers, blind to clinical details and ICA results and any disagreements were resolved by consensus. Positive stenosis was defined as diameter reduction >50%.	Interpretation – One experienced cardiologist who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction >50%.
Oncel 2007[51]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – no additional medication for heart-rate control given. Contrast agent – bolus 70 ml iopromidum (Ultravist 350/ ml, Schering, Berlin, Germany), flow rate of 6 ml /s, followed by 50 ml bolus of saline at 5 ml /s. Scan parameters – with collimation, 64 x 0.6 mm slice thickness, rotation time 0.33 s, pitch	Catheter angiography – 'standard techniques', no details reported. Interpretation – One experienced cardiologist who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	0.26–0.45, tube current 900 mAs, and tube voltage 120 kV. Interpretation – All images were assessed by two radiologists with 5 years cardiac CT experience each, who were blind to ICA results. Positive stenosis was defined as diameter reduction >50%. Vessels with poor or non-evaluable image quality were excluded from analysis. In per vessel/patient analysis the presence of any significant lesion was considered positive.	
Oncel 2008[52]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – no β-blockers were given before scanning. Contrast agent – bolus 70 ml iomeprol (400 mg I/ ml Iomeron, Bracco, Italy), flow rate of 6 ml /s, followed by 50 ml bolus of saline at 5 ml /s. Scan parameters – collimation 32 x 0.6 mm, slice acquisition 64 x 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.47, tube current 390 mAs per rotation, and tube voltage 120 kV. Interpretation – All images were assessed by two independent radiologists with 5 years cardiac CT experience each, who were blind	Catheter angiography – 'standard techniques', no details reported. Interpretation – One experienced cardiologist (at least 10 years angiography experience) who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction ≥50% anywhere within the stent or within the 5mm segment proximal or distal to the stent margins..

Study ID	Index test (assessed technology) details	Reference standard details
	to ICA results and clinical information. Any disagreements were resolved by consensus. Positive in-stent re-stenosis was defined as diameter reduction ≥50%. Persistent stenosis was defined as ≥50% narrowing 5 mm proximal and distal to the stent.	
Pflederer 2009[53]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – Patients with a heart rate > 65 bpm received 100mg atenolol p.o. 45- 60 min. before DSCT. If heart rate remained > 65 bpm up to 4 doses metoprolol 5mg were given i.v. Contrast agent – bolus 60 to 95 ml iopromide (370 mg I/ ml Ultravist 3070, Schering, Berlin, Germany), flow rate of 6 ml/s, followed by 50 ml bolus of saline at 6 ml/s. Scan parameters – collimation 0.6 mm, simultaneous collection of 2 x 64 slices, gantry rotation time 330 ms, pitch 0.2–0.43, tube current 400 mAs, and tube voltage 120 kV. Interpretation – All images were jointly assessed by two readers with >3 years cardiac CT experience. Each stent was first classified as assessable or not assessable. Assessable stents were evaluated for	Catheter angiography – to acquire ≥2 projections of the stented coronary segment. Interpretation – One experienced observer who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction ≥50%. Diagnostic accuracy was calculated for assessable stents.

Study ID	Index test (assessed technology) details	Reference standard details
	stenosis. Positive in-stent re-stenosis was defined as diameter reduction ≥50%. For patient based assessment non-assessable stents were classified as having in-stent re-stenosis using DSCT	
Pflederer 2010[37]	CT scanner – Somatom Definition FLASH, Siemens Healthcare, Forchheim, Germany. Use of β-blockers – NR Contrast agent – 60 to 90 ml i.v. unspecified contrast agent, flow rate of 6 ml/s. Scan parameters – collimation 2x128x0.6 mm, gantry rotation time 280 ms. No further details reported. Interpretation – No details of who interpreted scans were reported. Positive stenosis was defined as diameter reduction >50%.	Catheter angiography – no details reported Interpretation – No details of who interpreted angiograms were reported. Positive stenosis was defined as diameter reduction >50%.
Pugliese 2008[54] and Pugliese 2007[55]	CT Scanner – Somatom Definition, Siemens, Forchheim, Germany. Use of β-blockers – 70 (70%) Of patients were on treatment with β-blockers, none received additional β-blockers prior to scanning. Contrast Agent – 60-100ml contrast agent (Iomeron 400 mg/ml, Bracco, Italy) was injected into the antecubital vein at a flow rate	Catheter angiography – no details reported Interpretation - A single observer unaware of the CT results examined the angiograms before contrast injection to identify the sites of stent implantation. Positive in-stent re-stenosis was defined as luminal narrowing >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	of 5.0 ml/s, followed by a saline chaser (40 ml). Scan parameters – collimation 2x32x0.6 mm gantry rotation time 330 ms, pitch 0.20 - 0.43, tube current 412 mAs/rotation, and tube voltage 120 kV. Interpretation - Two experienced readers evaluated the DSCT studies independently; the readers were unaware of the findings of conventional angiography. Any disagreements were resolved by consensus. Positive in-stent re-stenosis was defined as ≥50% lumen diameter reduction. When multiple stents were implanted contiguously to treat one lesion, they were considered as one single stent. When stent lumen was un-interpretable and in-stent re-stenosis could not be excluded the stents were considered to have re-stenosis.	
Rist 2009[56]	CT scanner – Somatom Definition, Siemens Medical Systems, Forchheim, Germany. Use of β-blockers – β-blockers were not administered before the examination, 16 patients were receiving continuous β-blocker treatment, which was not interrupted for the examination.	Catheter angiography – ≥2 projections for each coronary artery Interpretation – One independent observer who was blinded to CT results assessed all angiograms. Positive stenosis was defined as diameter reduction ≥50%.

Study ID	Index test (assessed technology) details	Reference standard details
	Contrast agent – body weight adapted (1.25 ml/kg Ultravist, Iopromide 370 I/ml, Bayer-Schering, Berlin, Germany) i.v., mean volume 90 ml, mean flow rate 5.5 ml, followed by 50 ml saline. Scan parameters – collimation 0.6 mm, gantry rotation time 330 ms, pitch 0.2–0.43, tube current time product 410 mAs/rotation, effective tube current time product 360 mAs, and tube voltage 120 kV. Interpretation – All images were assessed by two experienced readers, blinded to clinical information and other test results. Positive stenosis per patient was defined as one or more significant diameter reduction ≥50%.	
Rixe 2009[38]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – β-blockers were not administered before the examination. Contrast agent – no details reported. Scan parameters – collimation 64 x 0.6 mm, no further details. Interpretation – No details of who interpreted scans were reported. Positive stenosis was defined as diameter reduction >50%. Un-	Catheter angiography – no details reported Interpretation – No details of who interpreted angiograms were reported. Positive stenosis was defined as diameter reduction >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	assessable segments were regarded as having significant stenosis.	
Ropers 2007[42]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – β-blockers were not administered before the examination. 34 patients were taking routinely β-blockers, which were not discontinued for the examination. Contrast agent – ≥60 ml (Omnipaque 350, Schering AGF, Berlin, Germany) i.v., flow rate 5 ml/s, followed by 50 ml saline at 5 ml/s. Scan parameters – collimation 0.6 mm, 2 x 64 slices, gantry rotation time 330 ms, pitch 0.2–0.43, tube current 400 mAs/tube, and tube voltage 120 kV. Interpretation – All images were assessed by one observer, blinded to clinical information and ICA results. Each coronary segment was first classified as evaluable or not evaluable. In evaluable segments Positive stenosis was defined as diameter reduction >50%. Un-evaluable segments were classified as positive.	Catheter angiography – no details reported Interpretation – one observer, different from the CT observer. Positive stenosis was defined as diameter reduction >50%.
Ropers 2008[40]	CT scanner – DSCT-Scanner, no details reported.	Catheter angiography – no details reported Interpretation – No details of who interpreted

Study ID	Index test (assessed technology) details	Reference standard details
	Use of β-blockers – NR Contrast agent – NR Scan parameters – collimation 0.6 mm, 2 x 64 slices, gantry rotation time 330 ms, no further details reported. Interpretation – No details of who interpreted scans were reported. Positive stenosis was defined as diameter reduction ≥50%.	angiograms were reported. Positive stenosis was defined as diameter reduction ≥50%.
Scheffel 2006[57]	CT scanner – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany. Use of β-blockers – β-blockers were not administered before the examination. Three patients took β-blockers as part of their baseline medication. Contrast agent – bolus 80 ml iodixanol i.v. (Visipaque 320, 320 mg/ ml, GE Healthcare, Buckinghamshire, UK), followed by 30 ml saline at 5 ml /s. Scan parameters – collimation 32 x 0.6 mm, 64 x 0.6 mm slice acquisition, gantry rotation time 330 ms, pitch 0.2–0.39, tube current 80 mA per rotation, and tube voltage 120 kV. Interpretation – All images were assessed by two independent readers and disagreements	Catheter angiography – 'standard techniques with multiple views stored ', no details reported. Interpretation – assessed by one experienced observer, blind to CT results. Positive stenosis was defined as diameter reduction >50%.

Study ID	Index test (assessed technology) details	Reference standard details
	were resolved by consensus. Positive stenosis was defined as diameter reduction >50%.	
Tsiflikas 2010[58] and Drosch[59]	CT – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany Use of β-blockers – 35 of 41 Patients were on daily β-blockers treatment. NR Contrast agent – 70 mL (90mL in patients with coronary artery bypass grafts) Imeron 400mg iodine/ml at a flow-rate of 5 mL/s, followed by a saline chaser bolus (50 mL, flow-rate 5mL/s) Scan parameters – 0.6 mm collimation (cardiac mode), 330 ms gantry rotation time, pitch 0.2 – 0.43 (automatically adapted to the patients' heart rate). Tube current for both tubes was 560mA and tube voltage was 120 kV. Interpretation – All CT data sets were interactively assessed by two experienced observers who were not aware of patient's clinical information or the coronary angiographic findings. Positive stenosis was defined as >50% diameter reduction.	Catheter angiography – No details reported Interpretation – by one independent, experienced interventional cardiologist using quantitative coronary analysis with automated vessel contour detection. The cardiologist was not aware of the CT-results. In coronary segments with more than one lesion, the lesion with the most severe diameter reduction determined the test result. Positive stenosis was define as >50% diameter reduction.
Van Mieghem 2007[39]	CT – DSCT (unspecified). No further details reported.	Catheter angiography – no details reported. Interpretation – Positive stenosis was defined

Study ID	Index test (assessed technology) details	Reference standard details
	Interpretation – Positive stenosis was defined as > 50% diameter reduction. No further details reported.	as > 50% diameter reduction. No further details reported.
Weustink 2009b[60]	CT – Somatom Definition Siemens Healthcare, Forchheim, Germany Use of β-blockers – No β-blockers were administered before scanning. Contrast Agent – A bolus of iodinated contrast material (Ultravist 370, Schering AG, Berlin, Germany), which varied between 80 and 100 ml depending on the expected scan time, was injected in an antecubital vein followed by a saline chaser (40 ml; flow rate 4.0 to 5.0 ml/s). Scan parameters –collimation 2 x 32 x 0.6, rotation time 330 ms, pitch 0.20-0.53, tube current 380 mAs/rotation, and tube voltage 120 kV. Area scanned - The scan range was extended to the level of the subclavian arteries in patients with internal mammary artery grafts. Interpretation – Two experienced radiologists blinded to ICA findings independently scored all CT datasets. Any disagreements were resolved by discussion. Positive stenosis was defined as ≥50% lumen diameter reduction.	Catheter angiography – no details reported Interpretation – One experienced cardiologist, unaware of the results of the CTA, identified all graft segments, distal runoffs, and native coronary segments. Lesions with ≥50% lumen diameter reduction in 2 orthogonal planes were considered positive for stenosis. Distal runoff segments supplied by occluded grafts were classified as native grafted segments. All graft and native coronary segments located distally to a total occlusion (100% lumen reduction) and not supplied by collaterals were classified as post-occlusion segments and were excluded from analysis. In addition, native grafted segments with a lumen diameter <1.5 mm were excluded. Stents with un-interpretable lumen were classified as having in–stent re-stenosis.
Weustink 2009a[61]	CT – Somatom Definition Siemens Healthcare, Forchheim, Germany	Catheter angiography – no details reported

Study ID	Index test (assessed technology) details	Reference standard details
	Use of β-blockers – no β-blockers were administered before scanning. Contrast Agent - A bolus of iodinated contrast material (370 mg/mL, Ultravist; Schering, Berlin, Germany), which varied between 60 and 100 mL, depending on the expected scan time, was injected (flow rate, 5.5 mL/sec) in an antecubital vein followed by a saline chaser (40 mL; flow rate, 5.5 mL/sec). Scan parameters - two x-ray tubes, 32 detector rows of 0.6 mm each, rotation time 330 msec, pitch 0.2-0.53, tube voltage, 120 kV; and full tube current, 625mA (independent of patient size). Interpretation – 2 Experienced observers each with 5 or more years experience in CT coronary angiography and unaware of the results of conventional coronary angiography, independently scored all CT coronary angiograms; any disagreements were resolved by consensus. Positive stenosis was defined as ≥ 50 % lumen diameter reduction. Segments distal to a chronic total occlusion were excluded. An intention to diagnose design was used: all scanned patients, including all segments, were analyzed even if the image quality was impaired.	Interpretation – 3 cardiologists with 5 or more years experience in interventional cardiology and unaware of the results of CT assessed all angiograms. All segments, regardless of size were included for comparison with CT coronary angiography. Positive stenosis was defined as lumen diameter reduction ≥ 50%.

Study ID	Index test (assessed technology) details	Reference standard details
Zhang 2010[62]	CT – Somatom Definition, Siemens Medical Solutions, Forchheim, Germany) Use of β-blockers – No β-blockers were administered before scanning. Contrast Agent –bolus of 80 ml of Ultravist (370 mg I/ml; Bayer Schering Pharma, Berlin, Germany) followed by 40 ml of saline solution injected into an antecubital vein via an 18-gauge catheter (injection rate, 5 ml/s). Scan parameters –rotation time of 0.33 s, tube voltage of 120 kVp, effective tube current of 330 mAs, adapted pitch value of 0.20 – 0.43 according to heart rate, slice thickness of 0.75 mm, a reconstruction increment of 0.5 mm. Interpretation –Two experienced observers, who had 8 and 3 years experience of interpretation of CTCA, respectively, and were unaware of the results of ICA, scored all DSCT coronary angiography datasets. Positive stenosis was defined as ≥50% diameter reduction. A true positive case was defined as having at least one worse than significant or severe stenosis in both per patient and per-vessel analyses	Coronary Angiography – CAG (INNOVA 3100, GE Healthcare, Waukesha, Wisc., USA) was performed according to 'standard techniques', and multiple views were stored. Interpretation – by one experienced observer with 10 years experience in the interpretation of CAT results who was unaware of the CTCA results. Positive stenosis was defined as ≥ 50% diameter reduction. In the case of multiple abnormal segments per artery, the vessel was classified by the segment with the most severe irregularity. Patients were classified as positive for the presence of significant CAD if there was a significant stenosis in any artery.

Inclusion/exclusion criteria and participant characteristics of included studies

Study ID	**Total participants (n)** **Participant group (n)**	**Inclusion criteria**	**Exclusion criteria**	**Participant characteristics**
Alkadhi 2010[44]	Total 150 HHR 75	Patients with chest pain and a negative or equivocal stress test but stable clinical conditions. Only patients with an intermediate pre-test probability of CAD were included. {ref Morise 1997}	Renal insufficiency (creatinine > 130 µmol/l), previous allergic reactions to iodinated contrast material, known CAD, or an unstable clinical condition.	HHR: Age (years) 63.5±12.0 Male/female 51/24 BMI (kg/m^2) 26.2±4.2 Obesity 27 (36.0%) HR 78.9±9.4 Calcium score 568±807 Type II DM 14 (18.7%) Family history CAD 8 (10.7%) Hyperlipidemia 32 (42.7%) Symptomic angina 64 (85.3%)
Brodoefel 2008b[45]	Total 125 Obese 44	Patients scheduled for catheter angiography for suspected CAD or suspected progression of known CAD.	Renal insufficiency (serum creatinine >1.5 mg/dl), hyperthyroidism (basal TSH <0.03 µL/l), known allergic reaction to iodinated contrast media, inability to follow breath-hold instruction, previous bypass surgery.	Obese: Age (years) 63 Male/female 29/15 BMI (kg/m^2) 32.8±2.5 HR 65.7±12.1 Calcium score 741±968 DM 15 (34.1%) Hypertension 41 (93.2%)
Brodoefel 2008a[46]	Total 100 HHR 30 HCS 47	Patients scheduled for catheter angiography for suspected CAD or suspected progression of known CAD.	Renal insufficiency (serum creatinine >1.5 mg/dl), hyperthyroidism (basal TSH <0.03 µL/l), known allergic reaction to iodinated contrast media, inability to follow breath-hold instruction, previous bypass	Total: Age (years) 62 ± 10 Male/female 80/20 Adiposis 61 (61%) HR 64.9±13.2 Calcium score 786.5±965.9 DM 24 (24%)

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
			surgery.	Hypertension 85 (85%)
de Graaf 2010[43]	Total 53 With stents 53 (121 stents)	Patients with previous stent implantation, referred for evaluation of recurrent chest pain, who underwent both CT and ICA.	(Supra)ventricular arrhythmias, renal failure (GFR <30 ml/min, known allergy to iodinated contrast media, severe claustrophobia, pregnancy, high heart rate in the presence of contraindications to β-blockade.	Stented: Age (years) 65±13 Male/female 37/16 BMI (kg/m^2) 27±3 HR 59±12 DM 12 (23%) Family history of CAD 16 (30%) Hypertension 43 (81%) Hypercholesterolemia 45 (85%) Previous MI 28 (53%) Previous bypass graft 8 (15%)
LaBounty 2010[41]	Total 81 With stents, unclear (54 stents)	NR	NR	NR
Leber 2007)[47]	Total 90 HHR and/or AF 46	Patients referred for coronary angiography, who had negative or equivocal stress tests, no prior known CAD and intermediate pre-test probability of CAD.{ref Morise 1997}	Renal insufficiency, known allergy to iodinated contrast media, unstable clinical condition.	Total: Age (years) 58±8 Male/female 57/33 HR 73 (range 48 to 112) DM 8 (8.9%) Family history of CAD 27 (30%) Hypertension 65 (72.2%) Hypercholesterolemia 36 (40%) Angina 73 (81.1%) Permanent β-blocker use 23 (25.6%)
Lin 2010[48]	Total 44 HHR 18	Patients suspected CAD and inconclusive cardiac	Allergy to iodinated contrast material, renal insufficiency	HR≥70 bpm: Age (years) 59.2±10.3

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
		stress test. Only patients with at least one significant stenosis on CT were advised to undergo ICA and these patients were eligible for inclusion in the study.	(creatinine level >120 µmol/l), pregnancy, hemodynamic instability, previous coronary stent implantation or bypass, >3 months between CT and ICA.	Male/female 13/5 BMI (kg/m^2) 26.6±2.6 HR 80.1±10.4 DM 4 (22.2%) Family history of CAD 4 (22.2%) Hypertension 7 (38.9%) Angina 13 (72.2%)
Marwan 2010[49]	Total 60 AF 60	Patients with AF and absence of previously known CAD.	Renal insufficiency (serum creatinine >1.4 mg/dl), inability to maintain adequate breath hold, rapid AF non-responsive to β-blockers and calcium-channel blockers (mean HR >100 bpm).	AF: Age (years) 71±7 Male/female 34/26 BMI (kg/m^2) 29±5 HR 70±15 DM 16 (27%) Family history of CAD 10 (17%) Hypertension 56 (93%) Long term β-blockers 46 (77%) High likelihood of CAD 24 (40%) Intermediate likelihood of CAD 21 (35%)
Meng 2009[50]	Total 109 HHR 50 HCS 17	Patients with suspected CAD.	Allergy to iodinated contrast media, thyroid disorder, renal insufficiency (creatinine >120 µmol/l), pregnancy, hemodynamic instability, previous stent implantation or bypass graft.	Total: Age (years) 63±9 Male/female 68/41 BMI (kg/m^2) 26.9±3.3 HCC (Agatston units) 226.5 HR (bpm) 71.8±13.2 DM 15 (13.7%) Hypertension 75 (68.8%)
Oncel	Total 15	Patients with AF who were	Unstable clinical condition,	AF:

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
2007[51]	AF 15	suspected of having co-existing CAD and were scheduled to undergo ICA.	known allergy to iodinated contrast media, elevated serum creatinine (>1.5 mg/dl, >132.6 µmol/l), previous stent implantation or bypass graft, inability to follow breath-hold instructions.	Age (years) 58.5±9.1 Male/female 9/6 HR 83.7±8.9 bpm
Oncel 2008[52]	Total 35 With stents 35 (48 stents)	Patients with suspected in-stent re-stenosis, based on symptoms or laboratory findings, who were scheduled to undergo ICA.	Unstable clinical condition, known allergy to iodinated contrast media, renal insufficiency (serum creatinine >1.5 mg/dl), inability to follow breath-hold instructions	With stents: Age (years) 65±8.2 Male/female 25/10 BMI (kg/m^2) 27.2±3.6 DM 8 (23%) Family history of CAD 18 (52%) Hypertension 21 (59%) Hypercholesterolemia 24 (68%) Angina 22 (63%) Serum creatinine 1±0.29 mg/dl
Pflederer 2009[53]	Total 112 With stents 112 (150 stents)	Patients with previous stent implantation, who were referred for ICA because of suspected progression of CAD.	Known allergy to iodinated contrast media, renal insufficiency (serum creatinine >1.5 mg/dl), possible pregnancy, in non-sinus rhythm, lesions with >1 implanted stent (≥2 stents implanted in bifurcation lesions, contiguous or slightly overlapping stents, and stent-in-stent implantation, any stent diameter < 3.0 mm, and stents implanted	With stents: Age (years) 65±11 Male/female 70/42 BMI (kg/m^2) 28.0±3.9 HR 60±9 bpm

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
			in bypass grafts.	
Pflederer 2010[37]	Total 55 Revascularised 55 (42 bypass grafts and 78 stents)	Patients with previous revascularisation who were scheduled for ICA.	NR	Total: HR 58±7 bpm
Pugliese 2008[54] and Pugliese 2007[55]	Total: 100 Stent: 100 Stent + High HR: 31	Patients with chest pain and prior stent implantation.	Serum creatinine > 120 μmol/l, irregular heart rhythm, known allergy to iodinated contrast media	All: Age (years) 62±10 M/F 78/22 Obesity (BMI ≥ 30 kg/m^2) 23 (23%) DM 21 (21%) Family history of CAD 29 (29%) Hypertension (≥ 160/95 or ongoing treatment) 45 (45%) Hypercholesterolemia (> 200 mg/dl (5.18 mmol/l) 51 (51%)
Rist 2009[56]	Total 68 AF 68	Patients with chronic AF who were referred for CT coronary angiography.	Hyperthyroidism (TSH <0.3 mU/l), renal insufficiency (serum creatinine>1.5 mg.dl), known allergy to iodinated contrast media, treatment with metformin, women who were nursing or in whom pregnancy could not be excluded.	AF: Age (years) 64±11 Male/female 55/13 HR (bpm) 77±25
Rixe 2009[38]	Total 30 AF 30	Patients with AF and suspected CAD.	NR	AF: Age (years) 64.9±14 Male/female 21/9 HR 73±16
Ropers	Total 100	Consecutive patients	Renal insufficiency (creatinine	HHR:

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
2007[42]	HHR 44	recruited for a first diagnostic angiogram for suspected CAD.	>1.5 mg/dl), in non-sinus rhythm, previously known CAD, previous stent implantation or bypass graft, acute coronary syndrome, hemodynamic instability.	Age (years) 60 Male/female 29/15 BMI (kg/m^2) 28 HR (bpm) 76±9
Ropers 2008[40]	Total 78 With bypass graft 78 (195 grafts)	Patients with previous bypass graft(s). No further details reported.	NR	Age (years) 64 range 40-87 No further details reported
Scheffel 2006[57]	Total 30 HHR 13 HCS 15	Patients who had undergone ICA for suspected CAD. Patients with irregular heart rates were not excluded.	Known allergy to iodinated contrast media, renal insufficiency (creatinine >120 µmol/l), pregnancy, hemodynamic instability, previous stent implantation or bypass graft.	HHR: Age (years) 62.9±13.3 Male/female 9/4 BMI (kg/m^2) 27.6±3.5 HR 84.2±8.4bpm Calcium score 674±780 HCS: Age (years) 63.4±8.9 Male/female 14/1 BMI (kg/m^2) 28.5±4.4 HR 70.0±15.1bpm Calcium score 1483±893 Total: Age (years) 63.1±11.3 Male/female 24/6 BMI (kg/m^2) 28.3±3.9 Obesity 23 (77%) HR 70.3±14.2bpm

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
				Calcium score 821±904 DM 19 (63.3%) Family history of CAD 16(53.3%) Hypertension 23 (76.7%) Angina 21 (70%)
Tsiflikas 2010[58] and Drosch[59]	Total: 44 Arrhythmia: 44	Patients scheduled for invasive coronary angiography because of suspected or known coronary artery disease without stable sinus rhythm.	Elevated serum creatinine levels > 1.5 mg/dl, unstable angina, thyroid disease, pregnancy, or patients with previous allergic reactions to iodinated contrast media.	Arrhythmia: Age (years): 68±9 M/F 31/13 BMI (kg/m^3) 27.9±4.3 Obesity 26 (59%) HR 69±14 bpm Calcium score 762 (range 0-4949.7) AF 25 (57%) DM 9 (20%) Hypertension 38 (86%) Family history of CAD 31 (70%) Previous stent implantation 19 (41%) Previous bypass graft 5 (11%) β-blocker use 35 (85%)
Van Mieghem 2007[39]	Total: 33 Stents: 33	Symptomatic patients, scheduled for invasive coronary angiography, who had previous PCI with large diameter (≥3 mm) stents.	Previous bypass graft.	NR
Weustink 2009b[60]	Total: 52 CABG: 52 CABG + high HR: NR	Symptomatic patients after surgical revascularisation with sinus heart rhythm, able to breath-hold for 15 s, and	Allergy to iodinated contrast media, impaired renal function (serum creatinine >120 μmol), AF, logistic inability to undergo a	CABG: Age (years) 66±13.2 M/F 41/11 BMI (kg/m^2) 27.2±5.8

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
		no previous coronary intervention	CT scan before ICA	HR 64.4±14.3 bpm DM 19 (37) Family history of CAD 21 (40%) Hypertension 16 (31) Previous MI 22 (42%) Long-term β-blockers 47 (90) Single bypass graft 11(21) Two bypass grafts 31 (60) Three bypass grafts 9 (17)
Weustink 2009a[61]	Total 927 Intermediate HR: 170 HHR: 85	Symptomatic patients with suspected or known coronary artery disease.	Previous surgical revascularisation, atrial fibrillation with fast ventricular response, known allergy to iodinated contrast media, impaired renal function (serum creatinine > 120 μmol).	Intermediate HR group: Age (years): 61.0±11.4 M/F 193/140 HR 71.9±3.7 bpm Long-term β-blocker use 134 (40.2%) High HR group: Age (years) 56.2±10.3 M/F 88/83 HR 88.8±8.4 bpm Long-term β-blocker use 53 (31.0%)
Zhang 2010[62]	Total: 113 HCS: 12 Medium HR: 31 HHR: 39	Patients with suspected CAD no allergy to iodine-containing contrast medium; sufficient renal function (creatinine level ≥120 mol/l), hemodynamic stability, non-pregnant status for women of child-bearing age, and	Failure to undergo CCA due to occluded iliac arteries, chest pain during examination	Total: Age(years) 64±12 M/F 82/31 Atypical Angina 46 (40.7%) Typical Angina 37 (32.7%) Unstable CAD 30 (26.5%)

Study ID	Total participants (n) Participant group (n)	Inclusion criteria	Exclusion criteria	Participant characteristics
		without previous stent or bypass surgery. Patients with non-sinus rhythm, obesity, or high coronary calcium were not excluded.		

Appendix 5: Table of excluded studies with rationale

The following is a list of studies excluded at the full paper screening stage of the review, along with the reasons for their exclusion. Studies listed in submissions from manufacturers of NGCCT are labelled 'M'.

The reasons for study exclusion are coded as follows:

population – The study did not include in difficult to image CAD patients of patients with congenital heart disease, OR data for these patients were not reported separately, OR categories of difficult to image patients (e.g. obese, HHR, HCS) were not defined as specified in section 5.1.

index test – The study did not assess the effectiveness of one of the four assessed technologies specified in section 5.1.

reference standard – The study was a diagnostic test accuracy study, which did not use ICA as the reference standard.

outcomes **– The study did not report any of the outcomes specified in section 5.1, OR, for diagnostic test accuracy studies, insufficient data were reported to allow the construction of 2 x2 contingency tables (numbers of TP, FN, FP, and TN test results).**

study design **– The study design was not one of those specified in section 5.1, OR the study included <10 participants in the relevant patient groups.**

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[102] Zemanek D, Adla T, Bradacova P, Hajek P, Veselka J. The role of the dual-source computed tomography in evaluation of restenosis after the left main coronary artery stenting, a comparison with coronary angiography and intravascular ultrasound. Presented at 22nd Annual Symposium of the Transcatheter Cardiovascular Therapeutics, 2010 21-25 Sep; Washington, United States. *J Am Coll Cardiol* 2010;56(13 Suppl 1):B90. – **reference standard**

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[104] Zheng M, Li J, Xu J, Chen K, Zhao H, Huan Y. Dual-source computed tomographic coronary angiography: image quality and stenosis diagnosis in patients with high heart rates. *Tex Heart Inst J* 2009;36(2):117-24.

The following is a list of those studies provided in submissions from manufacturers of NGCCT, which were excluded at the title and abstract screening stage, along with the reasons for their exclusion.

[1] Abdelkarim MJ, Ahmadi N, Gopal A, Hamirani Y, Karlsberg RP, Budoff MJ. Noninvasive quantitative evaluation of coronary artery stent patency using 64-row multidetector computed tomography. *J Cardiovasc Comput Tomogr* 2010;4(1):29-37. – **index test**

[2] Achenbach S, Marwan M, Ropers D, Schepis T, Pflederer T, Anders K, et al. Coronary computed tomography angiography with a consistent dose below 1 mSv using prospectively electrocardiogram-triggered high-pitch spiral acquisition. *Eur Heart J* 2010;31(3):340-6. – **outcomes**

[3] Bardo DME, Asamato J, Mackay CS, Minette M. Low-dose coronary artery computed tomography angiogram of an infant with tetralogy of fallot using a 256-slice multidetector computed tomography scanner. *Pediatr Cardiol* 2009;30(6):824-6. – **study design**

[4] Choi SI, George RT, Schuleri KH, Chun EJ, Lima JAC, Lardo AC. Recent developments in wide-detector cardiac computed tomography. *Int J Cardiovasc Imaging* 2009;25(Suppl 1):23-9. – **study design**

[5] Dewey M, Zimmermann E, Wollenberg U, Rief M, Greupner J, Hamm B. Reduction of radiation dose of 320-row coronary computed tomography angiography through prior coronary calcium scanning. Presented at American College of Cardiology's 59th Annual Scientific Session and i2 Summit: Innovation in Intervention, 2010 14-16 May; Atlanta, United States. *J Am Coll Cardiol* 2010;55(10 Suppl 1):A67.E627. – **study design**

[6] Earls JP, Berman EL, Urban BA, Curry CA, Lane JL, Jennings RS, et al. Prospectively gated transverse coronary CT angiography versus retrospectively gated helical technique: improved image quality and reduced radiation dose. *Radiology* 2008;246(3):742-53. – **outcomes**

[7] Efstathopoulos EP, Kelekis NL, Pantos I, Brountzos E, Argentos S, Grebac J, et al. Reduction of the estimated radiation dose and associated patient risk with prospective ECG-gated 256-slice CT coronary angiography. *Phys Med Biol* 2009;54(17):5209-22. – **outcomes**

[8] Einstein AJ. Radiation risk from coronary artery disease imaging: how do different diagnostic tests compare? *Heart* 2008;94(12):1519-21. – **study design**

[9] Faletra FF, D'Angeli I, Klersy C, Averaimo M, Klimusina J, Pasotti E, et al. Estimates of lifetime attributable risk of cancer after a single radiation exposure from 64-slice computed tomographic coronary angiography. *Heart* 2010;96(12):927-32. – **index test**

[10] Gaudio C, Evangelista A, Pasceri V, Pannarale G, Varrica S, Romitelli S, et al. Visualization of coronary arteries and coronary stents by low dose 320-slice multi-detector computed tomography in a patient with atrial fibrillation. *Int J Cardiol* 2010. – **study design**

[11] Gerber TC, Carr JJ, Arai AE, Dixon RL, Ferrari VA, Gomes AS, et al. Ionizing radiation in cardiac imaging: a science advisory from the American Heart Association

Committee on Cardiac Imaging of the Council on Clinical Cardiology and Committee on Cardiovascular Imaging and Intervention of the Council on Cardiovascular Radiology and Intervention. *Circulation* 2009;119(7):1056-65. **– study design**

[12] Gosling O, Loader R, Venables P, Roobottom C, Rowles N, Bellenger N, et al. A comparison of radiation doses between state-of-the-art multislice CT coronary angiography with iterative reconstruction, multislice CT coronary angiography with standard filtered back-projection and invasive diagnostic coronary angiography. *Heart* 2010;96(12):922-6. **– outcomes**

[13] Hameed TA, Teague SD, Vembar M, Dharaiya E, Rydberg J. Low radiation dose ECG-gated chest CT angiography on a 256-slice multidetector CT scanner. *Int J Cardiovasc Imaging* 2009;25(Supp 2):267-278. – **population**

[14] Heilbron BG, Leipsic J. Submillisievert coronary computed tomography angiography using adaptive statistical iterative reconstruction: a new reality. *Can J Cardiol* 2010;26(1):35-6. – **study design**

[15] Hein F, Meyer T, Hadamitzky M, Bischoff B, Albrecht W, Hendrich E, et al. Prospective ECG-triggered sequential scan protocol for coronary dual-source angiography: initial experience. *Int J Cardiovasc Imaging* 2009;25(Supp 2):231-239. – **study design**

[16] Hsieh J, Londt J, Vass M, Li J, Tang X, Okerlund D. Step-and-shoot data acquisition and reconstruction for cardiac x-ray computed tomography. *Med Phys* 2006;33(11):4236-48. **– study design**

[17] Husmann L, Valenta I, Gaemperli O, Adda O, Treyer V, Wyss CA, et al. Feasibility of low-dose coronary CT angiography: first experience with prospective ECG-gating. *Eur Heart J* 2008;29(2):191-7. **– study design**

[18] Kitagawa K, Lardo AC, Lima JAC, George RT. Prospective ECG-gated 320 row detector computed tomography: implications for CT angiography and perfusion imaging *Int J Cardiovasc* 2009;25(Supp 2):201-208. – **study design**

[19] Klass O, Walker M, Siebach A, Stuber T, Feuerlein S, Juchems M, et al. Prospectively gated axial CT coronary angiography: comparison of image quality and effective radiation dose between 64- and 256-slice CT. *Eur Radiol* 2010;20(5):1124-31. – **outcomes**

[20] LaBounty TM, Earls JP, Leipsic J, Heilbron B, Mancini GBJ, Lin FY, et al. Effect of a standardized quality-improvement protocol on radiation dose in coronary computed tomographic angiography. *Am J Cardiol* 2010;106(11):1663-7. – **index test**

[21] LaBounty TM, Leipsic J, Min JK, Heilbron B, Mancini GBJ, Lin FY, et al. Effect of padding duration on radiation dose and image interpretation in prospectively ECG-triggered coronary CT angiography. *AJR Am J Roentgenol* 2010;194(4):933-7. – **outcomes**

[22] Law WY, Yang CC, Chen LK, Huang TC, Lu KM, Wu TH, et al. Retrospective gating vs. prospective triggering for noninvasive coronary angiography: assessment of image quality and radiation dose using a 256-slice CT scanner with 270 ms gantry rotation. *Acad Radiol* 2011;18(1):31-9. – **outcomes**

[23] Lehman S, Malaiapan Y, Antonis P, Zhang M, Cameron J, Meredith I, et al. Assessment of coronary plaque presence and composition by 320-slice cardiac computed tomography: a comparative study using intravascular ultrasound. Presented at New Zealand Annual Scientific Meeting of the Cardiac Society of Australia and New Zealand, 2010 5-8 Aug; Adelaide, Australia. *Heart Lung Circ* 2010;19:s164. . – **reference standard**

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[25] Leipsic J, Labounty TM, Heilbron B, Min JK, Mancini GBJ, Lin FY, et al. Adaptive statistical iterative reconstruction: assessment of image noise and image quality in coronary CT angiography. *AJR Am J Roentgenol* 2010;195(3):649-54. – **outcomes**

[26] Lell M, Marwan M, Schepis T, Pflederer T, Anders K, Flohr T, et al. Prospectively ECG-triggered high-pitch spiral acquisition for coronary CT angiography using dual source CT: technique and initial experience. *Eur Radiol* 2009;19(11):2576-83. – **outcomes**

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[32] Schuijf JD, Delgado V, Van Werkhoven JM, de Graaf FR, Van Velzen JE, Boogers MM, et al. Novel clinical applications of state-of-the-art multi-slice computed tomography *Int J Cardiovasc Imaging* 2009;25(Supp 2):241-254. – **study design**

[33] Uehara M, Funabashi N, Komuro I. Predictors of various artifacts in coronary arterial images in subjects with chronic atrial fibrillation by 320 slice computed tomography considering reconstruction method. Presented at American College of Cardiology's 59th Annual Scientific Session and i2 Summit: Innovation in

Intervention, 2010 14-16 Mar; Atlanta, United States. *J Am Coll Cardiol* 2010;55(10 Suppl 1):A67.E626. – **study design**

[34] Walker MJ, Olszewski M, Desai MY, Halliburton SS, Flamm SD. New radiation dose saving technologies for 256-slice cardiac computed tomography angiography. *Int J Cardiovasc Imaging* 2009;25(Supp 2):189-199. – **study design**

[35] Weigold WG, Olszewski ME, Walker MJ. Low-dose prospectively gated 256-slice coronary computed tomographic angiography. *Int J Cardiovasc Imaging* 2009;25(Supp 2):217-230. – **study design**

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Appendix 6: NICE guidance relevant to treatment of congenital heart disease in childhood.

Chest pain of recent onset. NICE clinical guideline 95 (2010). Available from www.guidance.nice.org.uk/CG95

Unstable angina and NSTEMI. NICE clinical guideline 94 (2010). Available from www.guidance.nice.org.uk/CG94

Stable angina: NICE draft clinical guideline for consultation.
Guidance on the use of coronary artery stents. NICE technology appraisal guidance 71 (2003). Available from www.guidance.nice.org.uk/TA71

Drug eluting stents for the treatment of coronary artery disease. NICE technology appraisal guidance 152 (2008). Available from www.guidance.nice.org.uk/TA152

SeQuent Please balloon catheter for in-stent coronary restenosis. NICE medical technologies guidance 1 (2010). Available from www.guidance.nice.org.uk/MTG1

Off-pump coronary artery bypass grafting. NICE interventional procedure guidance 35 (2004). Available from www.nice.org.uk/guidance/IPG35 (currently being updated with an expected publication in January 2011)

Balloon dilatation of pulmonary valve stenosis. NICE interventional procedures guidance 67 (2004). Available from www.guidance.nice.org.uk/IPG67

Balloon angioplasty with or without stenting for coarctation or recoarctation of aorta in adults and children. NICE interventional procedures guidance 74 (2004). Available from www.guidance.nice.org.uk/IPG74

Balloon dilatation with or without stenting for pulmonary artery or non-valvar right ventricular outflow tract obstruction in children. NICE interventional procedures guidance 76 (2004). Available from www.guidance.nice.org.uk/IPG76

Balloon dilatation of systemic to pulmonary arterial shunts in children. NICE interventional procedures guidance 77 (2004). Available from www.guidance.nice.org.uk/IPG77

Balloon valvuloplasty for aortic valve stenosis in adults and children. NICE interventional procedures guidance 78 (2004). Available from www.guidance.nice.org.uk/IPG78

Endovascular atrial septostomy. NICE interventional procedure guidance 86 (2004). Available from www.guidance.nice.org.uk/IPG86

Radiofrequency valvotomy for pulmonary atresia. NICE interventional procedure guidance 95 (2004). Available from www.guidance.nice.org.uk/IPG95

Endovascular closure of atril septal defect. NICE interventional procedure guidance 96 (2004). Available from www.guidance.nice.org.uk/IPG96

Endovascular closure of patent ductus arteriosus. NICE interventional procedure guidance 97. Available from www.guidance.nice.org.uk/IPG97

Intraoperative fluorescence angiography in coronary artery bypass grafting. NICE interventional procedure guidance 98 (2004). Available from www.nice.org.uk/guidance/IPG98

Percutaneous pulmonary valve implantation for right ventricular outflow tract dysfunction. NICE interventional procedure guidance 237 (2007). Available from www.guidance.nice.org.uk/IPG237

Hybrid procedure for interim management of hypoplastic left heart syndrome in neonates. NICE interventional procedures guidance 246 (2007). Available from www.guidance.nice.org.uk/IPG246

Percutaneous laser revascularisation for refractory angina pectoris. NICE interventional procedures guidance 302 (2009). Available from www.nice.org.uk/guidance/IPG302

Transmyocardial laser revascularisation for refractory angina pectoris. NICE interventional procedures guidance 301 (2009). Available from www.nice.org.uk/guidance/IPG301

Transcatheter endovascular closure of perimembranous ventricular septal defect. NICE interventional procedure guidance 336 (2010). Available from www.guidance.nice.org.uk/IPG336

Endoscopic saphenous vein harvest for coronary artery bypass grafting. NICE interventional procedures guidance 343 (2010). Available from www.guidance.nice.org.uk/IPG343