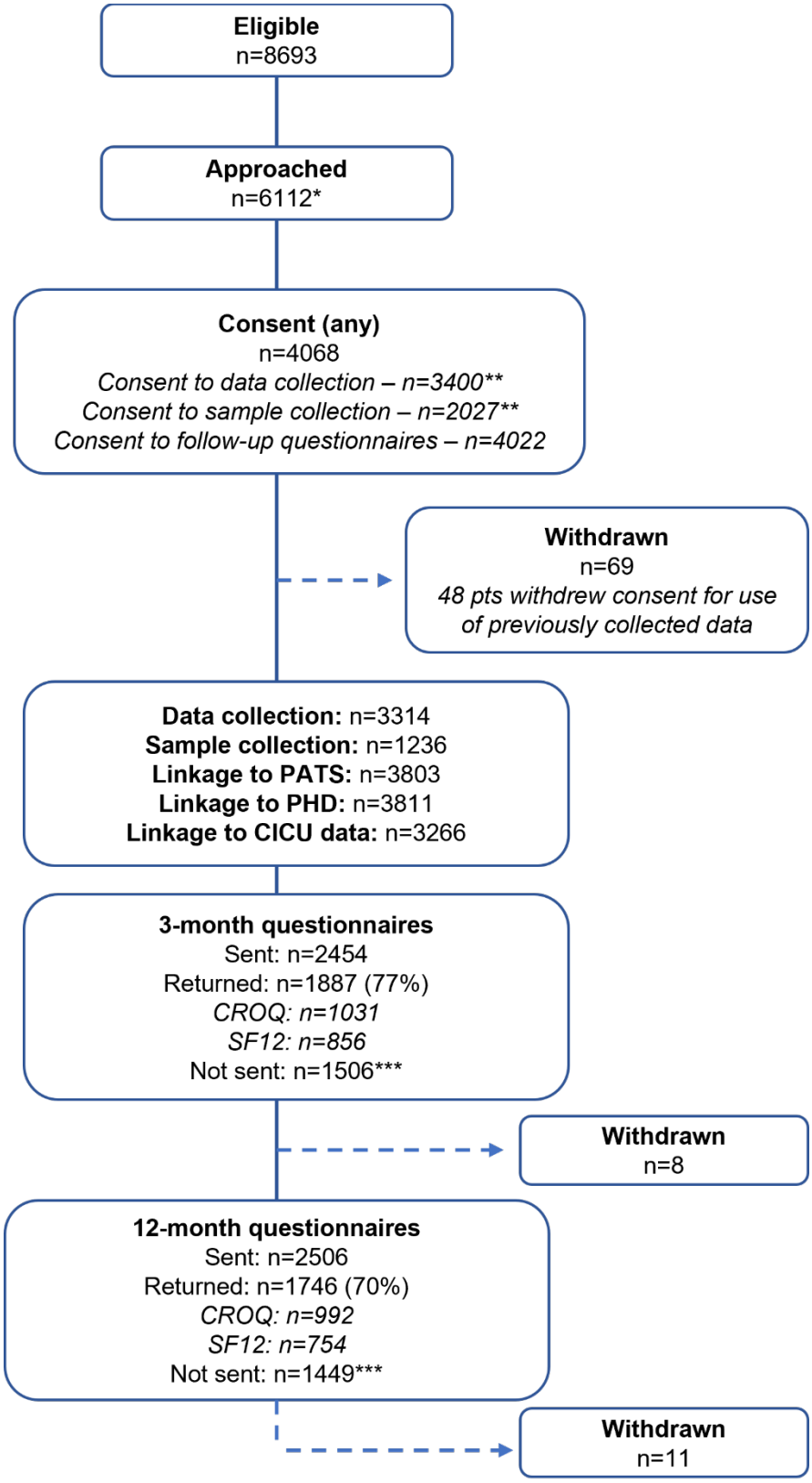
Figure 1: CONSORT flow diagram



* Using consent model 1, all patients identified as eligible were approached. Using consent model 2, some patients identified as eligible were not approached.
** Only applicable for participants approached under consent model 2
*** Some patients who consented to follow-up questionnaires did not have questionnaires sent due to logistical issues. Denominator is the patients who were sent follow-up questionnaires.
Abbreviations: CROQ=Coronary Revascularisation Outcomes Questionnaire

Table 1: Demographic data summarised for the overall OMACS cohort and separately for the subset of participants with samples collected. Data are presented as n/N (%) unless otherwise specified.

Demography	Overall (n=3314)		Participants with samples (n=1236)	
Age *mean, (SD)*	64.7	(12.99)	64.5	(12.84)
Male sex	2463/3313	(74%)	914/1236	(74%)
Surgical procedure				
Isolated CABG	1227/3128	(39%)	440/1149	(38%)
Isolated valve	946/3128	(30%)	334/1149	(29%)
Combined CABG and valve	308/3128	(10%)	111/1149	(10%)
Other cardiac procedures	647/3128	(21%)	264/1149	(23%)
Operative urgency				
Elective	1862/3139	(59%)	687/1159	(59%)
Urgent	1228/3139	(39%)	471/1159	(41%)
Emergency/salvage	49/3139	(2%)	1/1159	(0.1%)
BMI *mean (SD)*	28.2	(5.13)	28.3	(5.07)
Angina CCS class				
No angina	1097/2832	(39%)	403/1060	(38%)
I	316/2832	(11%)	148/1060	(14%)
II	800/2832	(28%)	292/1060	(28%)
III	430/2832	(15%)	157/1060	(15%)
IV	189/2832	(7%)	60/1060	(6%)
Dyspnoea status				
I	460/2829	(16%)	175/1058	(17%)
II	1337/2829	(47%)	493/1058	(47%)
III	933/2829	(33%)	352/1058	(33%)
IV	99/2829	(3%)	38/1058	(4%)
Previous MI	697/2769	(25%)	256/1009	(25%)
Previous PCI	325/2761	(12%)	137/1003	(14%)
Previous cardiac surgery	210/2905	(7%)	82/1083	(8%)
Diabetic	573/2819	(20%)	231/1054	(22%)
History of hypertension	1927/2791	(69%)	749/1032	(73%)
Smoking status				
Never smoked	1426/2795	(51%)	528/1033	(51%)
Ex smoker	1155/2795	(41%)	437/1033	(42%)
Current smoker	214/2795	(8%)	68/1033	(7%)

Preoperative renal failure	24/2771	(1%)	14/1029	(1%)
History of pulmonary disease	303/2805	(11%)	106/1047	(10%)
History of neurological disease	232/2802	(8%)	82/1044	(8%)
History of neurological dysfunction	73/2809	(3%)	26/1042	(2%)
Extracardiac arteriopathy	285/2771	(10%)	92/1008	(9%)
Pre-operative heart rhythm				
Sinus rhythm	2399/2830	(85%)	875/1057	(83%)
Atrial fibrillation/flutter	351/2830	(12%)	147/1057	(14%)
Complete heart block/pacing	48/2830	(2%)	17/1057	(2%)
Other abnormal rhythm	32/2830	(1%)	18/1057	(2%)
Left heart catheterisation	2614/3022	(86%)	954/1113	(86%)
Left main stem disease >50% diameter stenosis*	367/2737	(13%)	119/1013	(12%)
Ejection fraction				
Good (LVEF >50%)	2363/3045	(78%)	860/1120	(77%)
Fair (LVEF 31 – 50%)	580/3045	(19%)	211/1120	(19%)
Poor (LVEF ≤30%)	102/3045	(3%)	49/1120	(4%)
Logistic EuroSCORE *median (IQR)*	3.1	(1.70, 5.82)	2.9	(1.51, 5.49)

* Other participants had either no left main stem disease or left main stem disease <= 50% diameter
Missing data *[Data given as numbers of participants with missing data overall (number of participants with samples with missing data)]: Age - 1 (0); BMI - 309 (104); Logistic EuroSCORE - 710 (421)*
Abbreviations: SD=standard deviation; IQR=inter-quartile range; CABG=coronary artery bypass graft; BMI=body mass index; CCS=Canadian Cardiovascular Society; MI=myocardial infarction; PCI=percutaneous coronary intervention; LVEF=left ventricular ejection fraction

Table 2: Operative data summarised for the overall OMACS cohort and separately for the subset of participants with samples collected. Data are presented as n/N (%) unless otherwise specified.

Operative details	Overall (n=3314)		Participants with samples (n=1236)	
Number of distal coronary anastomoses (CABG patients only)				
0	20/1482	(1%)	3/520	(1%)
1	274/1482	(18%)	107/520	(21%)
2	521/1482	(35%)	181/520	(35%)
3	576/1482	(39%)	193/520	(37%)
4+	91/1482	(6%)	36/520	(7%)
Surgery performed using cardiopulmonary bypass	2612/3047	(86%)	982/1125	(87%)
Cumulative bypass time *mean (SD)*	95.0	(73.00, 126.00)	100.5	(76.00, 133.00)
Cumulative cross-clamp time *median (IQR)*	65.0	(47.00, 91.00)	68.0	(49.00, 94.00)
Cold cardioplegia*	2196/2578	(85%)	836/970	(86%)
Antegrade cardioplegia infusion**	2162/2567	(84%)	821/964	(85%)
Intermittent cardioplegia ***	2565/2573	(99.7%)	962/967	(99.5%)

Blood cardioplegia****	2575/2584	(99.7%)	968/972	(99.6%)
Tranexamic acid	2533/2920	(87%)	953/1107	(86%)
Cell saver set up	762/2971	(26%)	323/1119	(29%)
RBC transfused intra-op	332/2555	(13%)	139/979	(14%)
FFP transfused intra-op	170/2555	(7%)	71/979	(7%)
Platelets transfused intra-op	506/2556	(20%)	232/979	(24%)
Cryoprecipitate transfused intra-op	214/2556	(8%)	110/979	(11%)
Pump blood returned	1110/2469	(45%)	358/975	(37%)
Activation factor VII	88/3005	(3%)	39/1121	(3%)
Arrhythmias at end of the operation requiring treatment				
No, sinus rhythm only	2187/3020	(72%)	802/1124	(71%)
AV block	87/3020	(3%)	36/1124	(3%)
Atrial fibrillation/flutter	136/3020	(5%)	46/1124	(4%)
Ventricular fibrillation/Ventricular tachycardia	25/3020	(0.8%)	6/1124	(0.5%)
Sinus bradycardia	220/3020	(7%)	85/1124	(8%)
Other	365/3020	(12%)	149/1124	(13%)
Pacing at end of the operation				
None	2136/3024	(71%)	792/1124	(70%)
Single chamber	490/3024	(16%)	202/1124	(18%)
Dual chamber	313/3024	(10%)	101/1124	(9%)
Permanent	73/3024	(2%)	25/1124	(2%)
Other	12/3024	(0.4%)	4/1124	(0.4%)
Total ventilation time *median (IQR)*	11.5	(9.2, 17.0)	11.8	(9.3, 18.2)
Not extubated	18/3034	(1%)	10/1122	(1%)
Reintubation	134/3269	(4%)	51/1221	(4%)

** All other participants had warm cardioplegia*

*** All other participants had retrograde and antegrade CPB*

**** All other participants had continuous CPB*

***** All other participants had crystalloid or other cardioplegia solution*

***Missing data** [data given as numbers of participants with missing data overall (number of participants with samples with missing data)]: Cumulative bypass time - 21 (2); Cumulative cross-clamp time - 39 (10); Total ventilation time - 173 (50)*

Table 3: Patient outcomes summarised for the overall OMACS cohort and separately for the subset of participants with samples collected. Data are presented as n/N (%) unless otherwise specified.

Patient outcomes	Overall (n=3314)		Participants with samples (n=1236)	
MACE	110/3272	(3%)	56/1231	(5%)
Time to MACE (days) *median (IQR)*	2.0	(1.0, 5.0)	3.0	(1.0, 6.5)
Confirmed MI	30/3273	(1%)	14/1230	(1%)
Stroke	52/3282	(2%)	26/1230	(2%)
In-hospital death	35/3305	(1%)	22/1233	(2%)
Time to in-hospital death (days) *median (IQR)*	6.0	(1.0, 14.0)	7.5	(1.0, 14.0)
Death within 1 year	99/3313	3%	46/1236	4%

Time to death (within 1 year) (days) *median (IQR)*	63.0	(9.00, 183.00)	21.5	(6.00, 108.00)
Time to ICU discharge (hours) *median (IQR)*	68.7	(46.30, 111.30)	67.9	(44.90, 111.20)
Time to hospital discharge (days) *median (IQR)*	7.0	(5.00, 10.00)	7.0	(5.00, 10.00)
Reoperation	168/3295	(5%)	68/1231	(6%)
Reoperation for bleeding	95/135	(70%)	42/53	(79%)
Reoperation for cardiac tamponade	24/135	(18%)	6/53	(11%)
Reoperation for cardiac arrest	7/136	(5%)	5/54	(9%)
Reoperation for low cardiac output	28/135	(21%)	14/53	(26%)
Reoperation, other reason	23/136	(17%)	6/54	(11%)
Cardiac arrest	38/3284	(1%)	20/1230	(2%)
Resuscitation attempted	34/38	(89%)	18/20	(90%)
Resuscitation successful	28/34	(82%)	15/18	(83%)
SVT/AF	1141/3284	(35%)	426/1230	(35%)
VT/VF	38/3283	(1%)	21/1230	(2%)
New pacing	904/3285	(28%)	357/1230	(29%)
Temporary pacing became permanent	119/859	(14%)	46/341	(13%)
ICD	26/2387	(1%)	13/1120	(1%)
Vasopressors used	1938/3034	(64%)	770/1121	(69%)
Any inotropes used	965/3030	(32%)	370/1121	(33%)
IABP inserted	36/3280	(1%)	20/1230	(2%)
Pulmonary artery catheter inserted	34/3280	(1%)	17/1230	(1%)
Vasodilator used	716/3281	(22%)	287/1230	(23%)
Tracheostomy	37/3281	(1%)	18/1230	(1%)
Mask CPAP	274/3131	(9%)	86/1190	(7%)
ARDS	13/3281	(0.4%)	5/1230	(0.4%)
Pneumothorax or pleural effusion requiring drainage	121/3031	(4%)	53/1120	(5%)
High flow oxygen	333/1967	(17%)	169/870	(19%)
Haemofiltration/dialysis since heart operation	73/3133	(2%)	37/1191	(3%)
Acute kidney injury	747/2967	(25%)	302/1121	(27%)
Stage 1	521/745	(70%)	192/302	(64%)
Stage 2	118/745	(16%)	55/302	(18%)
Stage 3	106/745	(14%)	55/302	(18%)
Peptic ulcer/GI bleed/perforation	13/3282	(0.4%)	4/1230	(0.3%)
Pancreatitis	<5/3282	(0.1%)	<5/1230	(0.2%)
Ischaemic bowel requiring treatment	<5/3282	(0.1%)	<5/1230	(0.1%)
TIA	10/3282	(0.3%)	<5/1230	(0.2%)
DVT	9/3281	(0.3%)	<5/1230	(0.3%)
Pulmonary embolus	10/3281	(0.3%)	5/1230	(0.4%)
Excess bleeding not requiring re-operation	50/3032	(2%)	23/1121	(2%)

Pericardial effusion requiring drainage	134/3131	(4%)	66/1191	(6%)
Any unexpected complication	673/3308	(20%)	300/1233	(24%)
Infectious complications				
Any suspected infection	*1050/2677*	*(39%)*	*417/1029*	*(41%)*
Any confirmed infection	*220/2310*	*(10%)*	*104/904*	*(12%)*
Suspected sepsis	*782/3030*	*(26%)*	*310/1121*	*(28%)*
Temperature <36C or >38C	*651/782*	*(83%)*	*269/310*	*(87%)*
Unexplained increased heart rate above normal for patient	*186/780*	*(24%)*	*79/310*	*(25%)*
CRP >5mg/L	*773/782*	*(99%)*	*308/310*	*(99%)*
WBC >12.0	*365/782*	*(47%)*	*147/310*	*(47%)*
Unexplained increased respiratory rate above normal for patient	*261/779*	*(34%)*	*104/309*	*(34%)*
Respiratory infection	*640/2662*	*(24%)*	*256/1026*	*(25%)*
Superficial wound infection	*128/2641*	*(5%)*	*49/1022*	*(5%)*
Wound dehiscence requiring rewiring or treatment	*29/2642*	*(1%)*	*9/1022*	*(1%)*
UTI	*43/2643*	*(2%)*	*18/1023*	*(2%)*
Unspecified infection	*48/2640*	*(2%)*	*13/1022*	*(1%)*
Other infection	*58/1878*	*(3%)*	*26/790*	*(3%)*
Post-op antibiotics started (participants with any suspected infection)	*756/1048*	*(72%)*	*303/416*	*(73%)*

Missing data *[Data given as numbers of participants with missing data overall (number of participants with samples with missing data)]: Time to discharge - 1 (0); Time to ICU discharge - 81 (18).*
Counts of 4 or less have been suppressed to maintain anonymity.
Abbreviations: MACE=major adverse cardiovascular event; IQR=inter-quartile range; MI=myocardial infarction; ICU=intensive care unit; SVT/AF=supraventricular tachycardia/atrial fibrillation; VT/VF=ventricular tachycardia/ventricular fibrillation; ICD= implantable cardioverter defibrillator; IABP=intra-aortic balloon pump; CPAP=continuous positive airway pressure; ARDS=acute respiratory distress syndrome; GI=gastrointestinal; TIA=transient ischaemic attack; DVT=deep vein thrombosis; CRP=c-reactive protein; WBC=white blood cell; UTI=urinary tract infection.

Table 4: Patient quality of life outcomes summarised for the overall OMACS cohort and separately for the subset of participants with samples collected. Data are presented as n/N (%) unless otherwise specified.

Patient outcomes	Overall (n=3975)		Participants with samples (n=1225)	
SF12 questionnaires at 3 months				
Questionnaires returned	856/1147	75%	293/423	69%
Physical component score *median (IQR)*	46.6	(39.37, 53.66)	47.5	(39.37, 53.87)
Mental component score *median (IQR)*	51.5	(42.69, 57.71)	50.1	(42.35, 57.56)
SF12 questionnaires at 12 months				
Questionnaires returned	754/1169	64%	243/368	66%

Physical component score *median (IQR)*	49.7	(40.47, 55.85)	49.5	(40.99, 55.88)
Mental component score *median (IQR)*	53.2	(43.74, 58.12)	52.4	(42.23, 57.45)
Coronary Revascularisation Outcomes Questionnaire at 3 months				
Questionnaires returned	1031/1307	79%	372/486	77%
Symptoms score *median (IQR)*	92.9	(85.71, 100.00)	92.9	(83.92, 100.00)
Physical score *median (IQR)*	87.5	(71.43, 100.00)	87.5	(68.75, 100.00)
Cognitive function score *median (IQR)*	93.3	(80.00, 100.00)	93.3	(73.33, 100.00)
Psychological function score *median (IQR)*	83.9	(69.64, 94.64)	83.9	(69.64, 92.86)
Satisfaction score *median (IQR)*	83.3	(68.06, 91.67)	80.3	(65.14, 90.97)
Adverse events score *median (IQR)*	88.6	(77.27, 95.45)	88.6	(79.55, 95.45)
Coronary Revascularisation Outcomes Questionnaire at 12 months				
Questionnaires returned	992/1337	74%	347/472	74%
Symptoms score *median (IQR)*	96.4	(85.71, 100.00)	96.4	(85.71, 100.00)
Physical score *median (IQR)*	93.8	(75.00, 100.00)	93.8	(75.00, 100.00)
Cognitive function score *median (IQR)*	93.3	(80.00, 100.00)	93.3	(80.00, 100.00)
Psychological function score *median (IQR)*	91.1	(78.57, 98.21)	91.1	(78.57, 98.21)
Satisfaction score *median (IQR)*	83.3	(68.33, 94.44)	83.3	(66.67, 100.00)
Adverse events score *median (IQR)*	93.2	(86.36, 97.73)	95.5	(86.36, 97.73)

Missing data *[Data given as numbers of participants with missing data overall (number of participants with samples with missing data)]: 3 month SF12 summary scores - 7 (4); 12 month SF12 summary scores - 6 (3); 3 month CROQ Symptoms score - 4 (0); Physical score - 14 22); Cognitive function score - 7 (0); Psychological function score - 8 (0); Satisfaction score - 3 (0); Adverse events score - 13 (1); 12 month CROQ Symptoms score - 4 (1); Physical score - 14 (3); Cognitive function score - 6 (3); Psychological function score - 8 (1); Satisfaction score - 6 (1); Adverse events score - 13 (3)*