

The Prince Charles Hospital Cardiac Catheterisation Laboratory Annual Report 2016-17



The Prince Charles Hospital

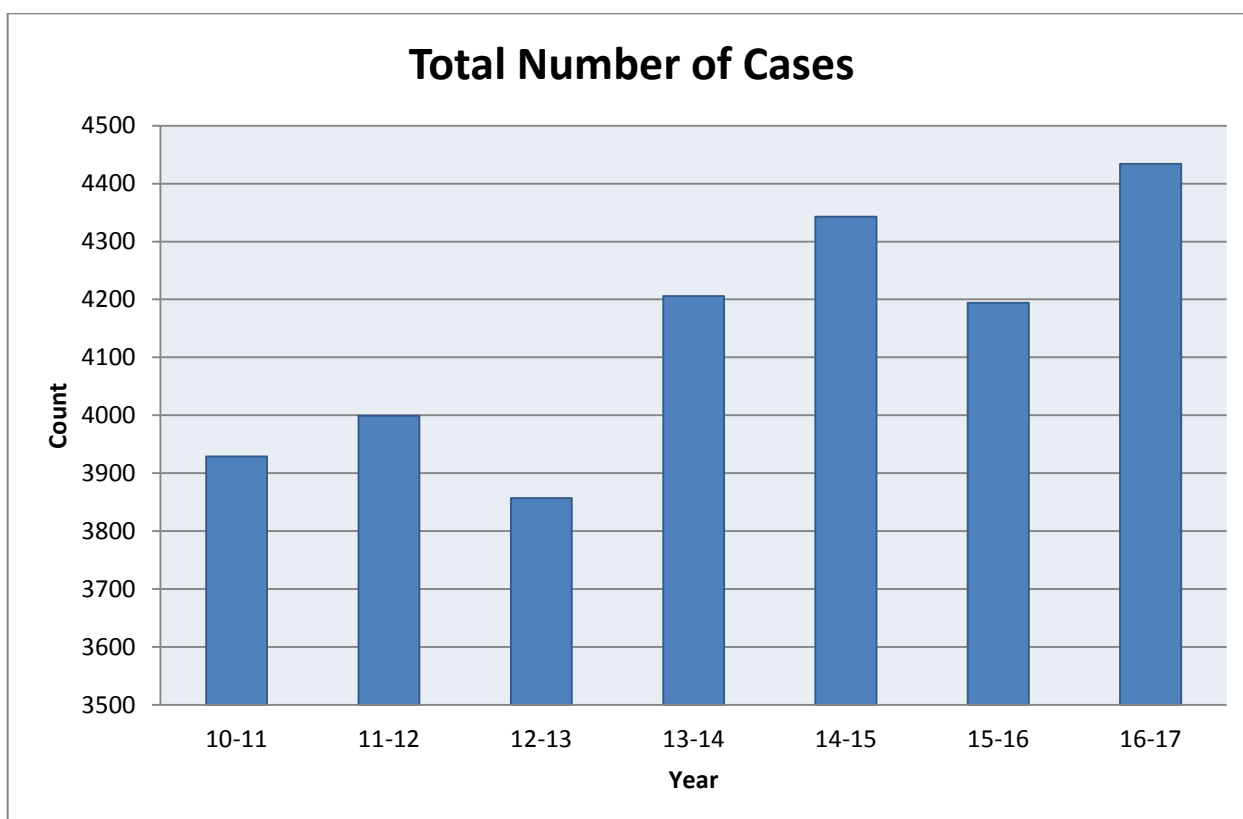
The Prince Charles Hospital
 **Heart^{and} Lung
Institute**

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Procedural Volumes

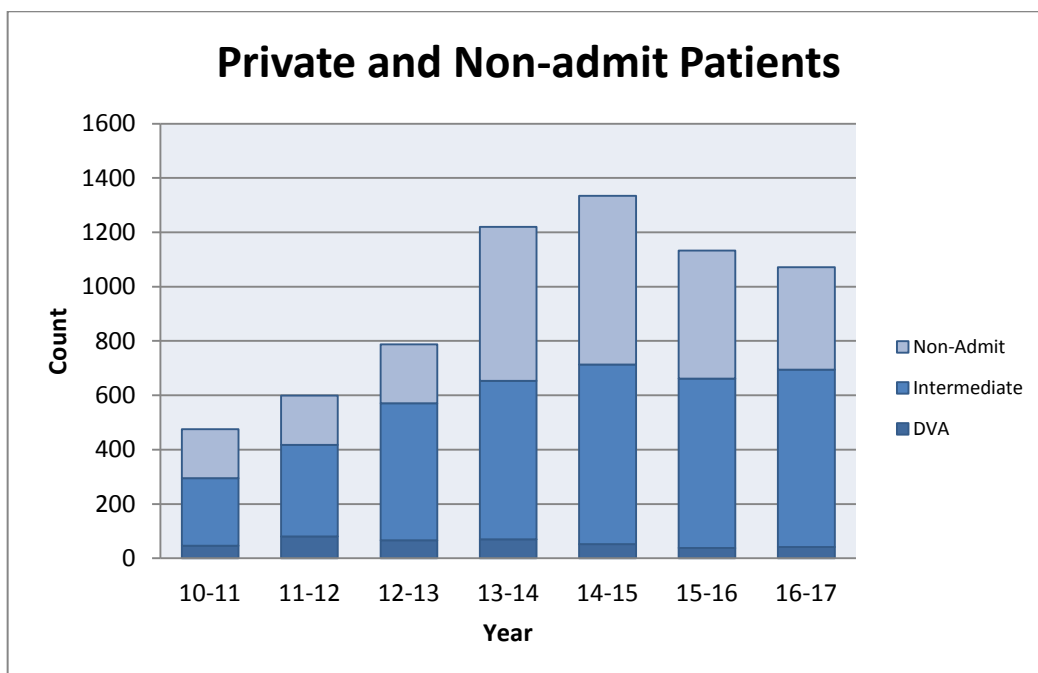
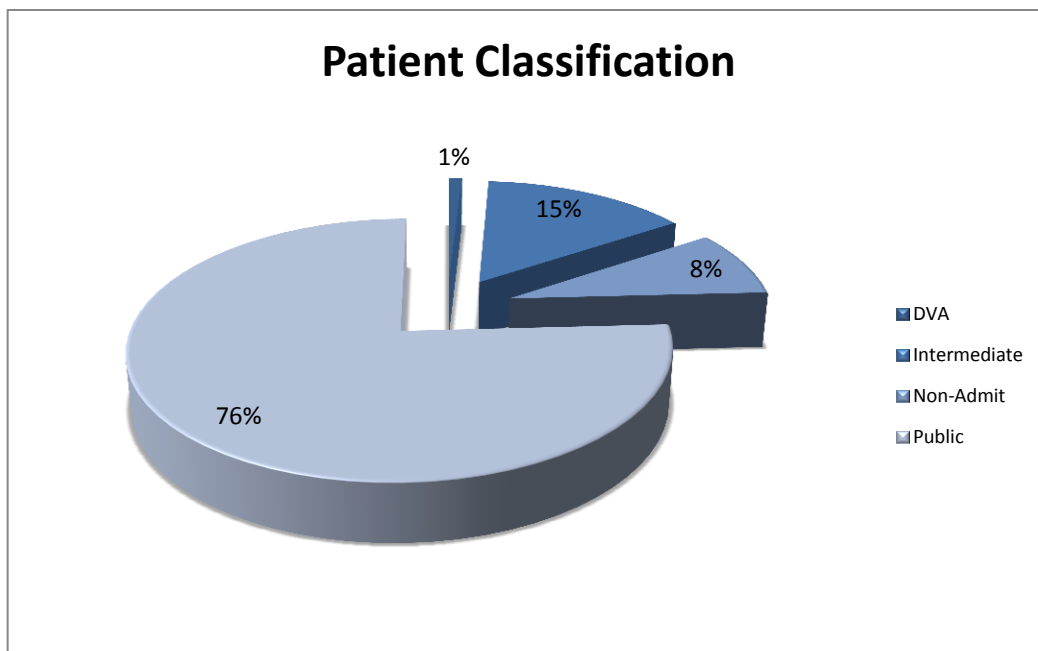
Financial Year	Total of CCL Procedures
2005 – 2006	3595
2006 – 2007	3585
2007 – 2008	4020
2008 – 2009	3747
2009 – 2010	3708
2010 – 2011	3929
2011 – 2012	3999
2012 – 2013	4133
2013 – 2014	4206
2014 – 2015	4343
2015 – 2016	4194
2016 – 2017	4434



Patient Demographics

Female:	1557 (35.1%)	Average Age:	67.3 ± 14.3	
Male:	2877 (64.9%)	Average Age:	65.2 ± 13.2	
		Average Age:	65.9 ± 13.6	(mean ± SD)

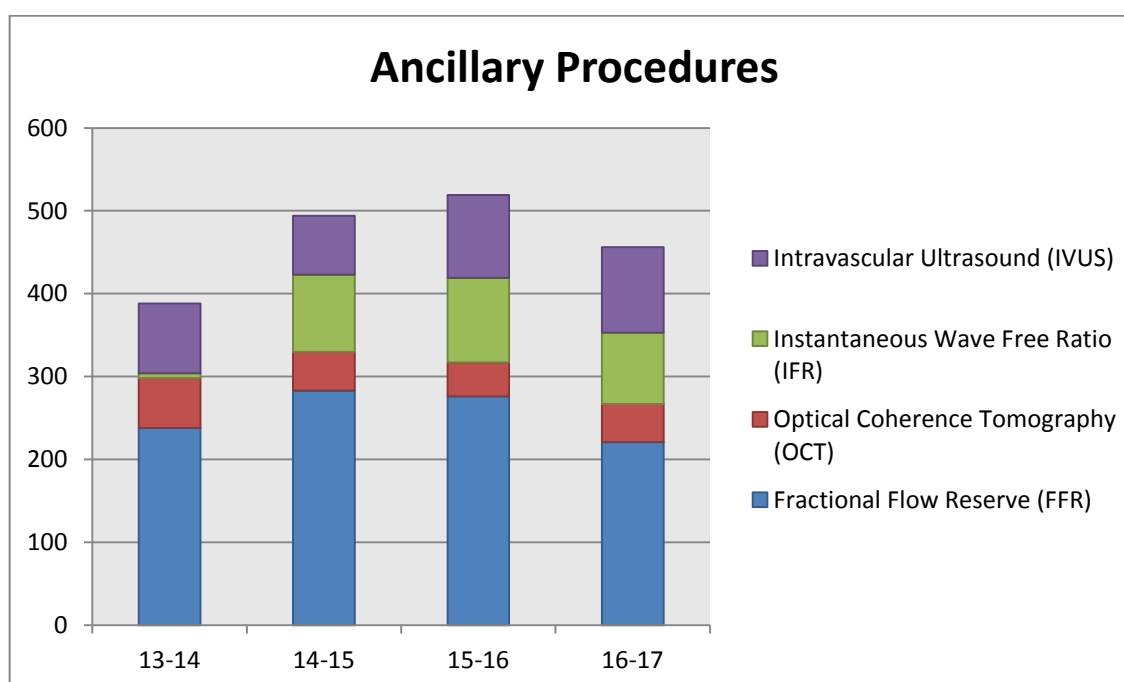
Public	Private	DVA	Non-Admit	Total
3362	653	41	378	4434



Coronary Procedures Performed

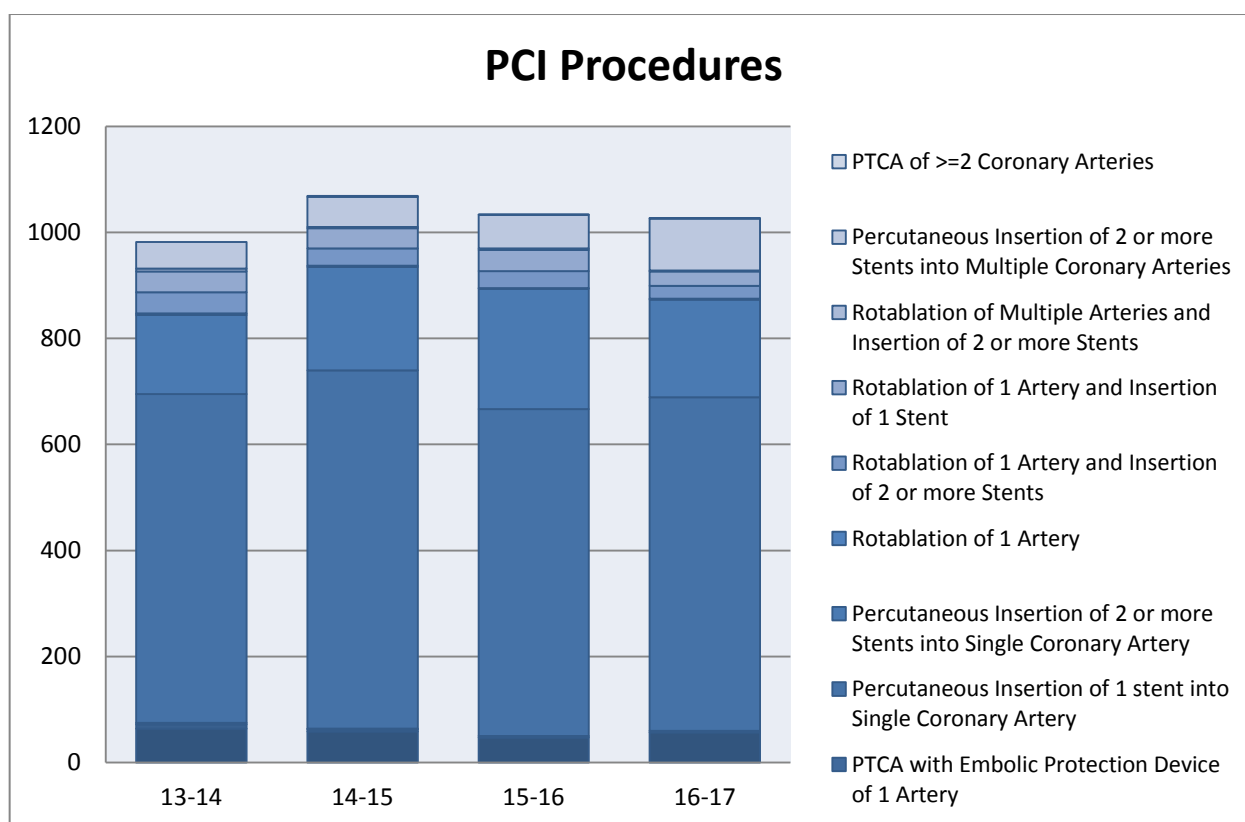
Procedure	2015-16			2016-17		
	Public	Private	Total	Public	Private	Total
Right Heart Catheter	330	158	488	378	173	551
Coronary Angiogram	2606	982	3588	2664	835	3499
Graft Study	288	66	354	270	83	353
Insertion of IABP	26	9	35	40	10	50
Insertion of IVC Filter				1		1
Intravascular Ultrasound (IVUS)	85	9	94	91	12	103
Fractional Flow Reserve (FFR)	214	33	247	196	25	221
Optical Coherence Tomography (OCT)	33	6	39	39	7	46
POBA	39	8	47	53	8	61
Single Vessel PCI	661	121	782	672	141	813
Multi Vessel PCI	55	6	61	87	11	98
Rotablation	57	10	67	47	8	55
Pericardiocentesis	23	5	28	22	6	28
Renal Denervation	1		1			
Myocardial Biopsy	36	18	54	39	15	54
TASH	1		1	4		4
Temporary Pacing	173	59	232	170	39	209
Screen Airways, Pacing Leads, Heart Valves	14	1	15	16	1	17

Ancillary Procedures Performed



Percutaneous Coronary Intervention

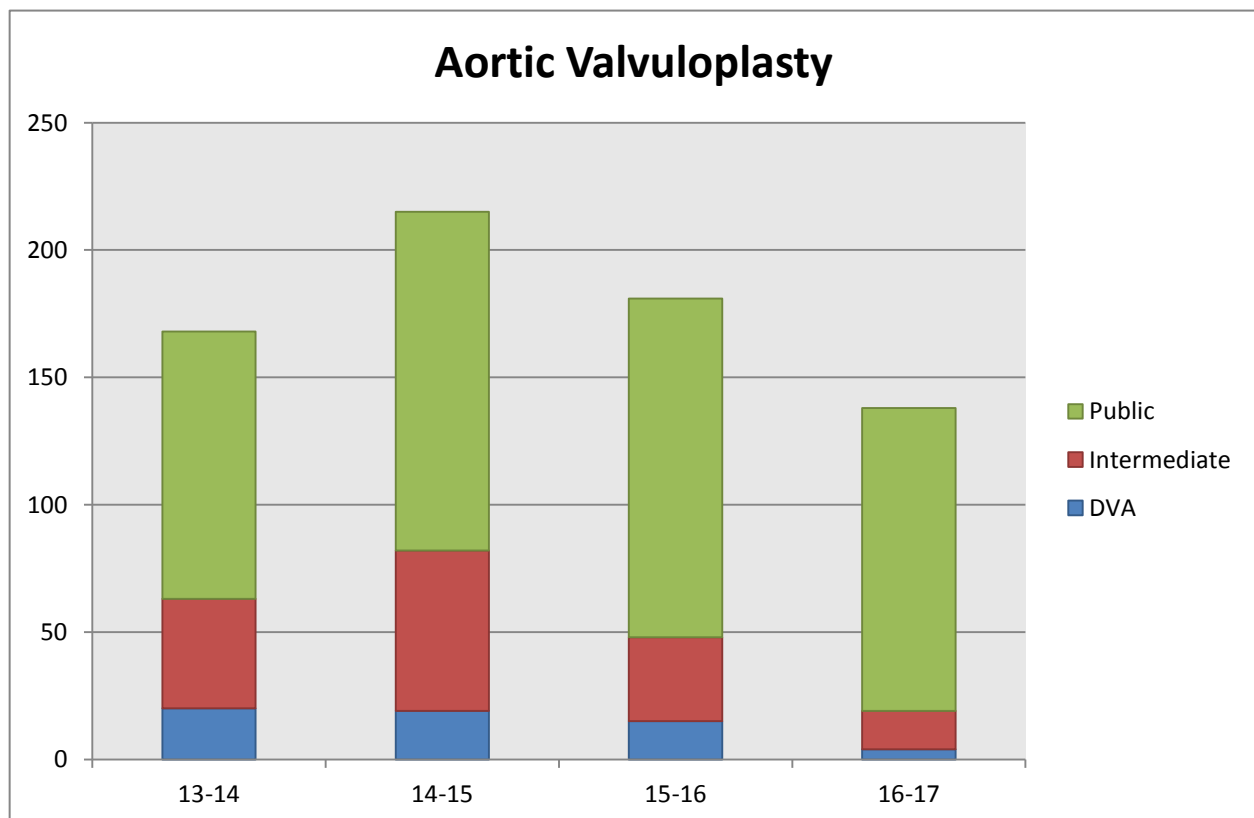
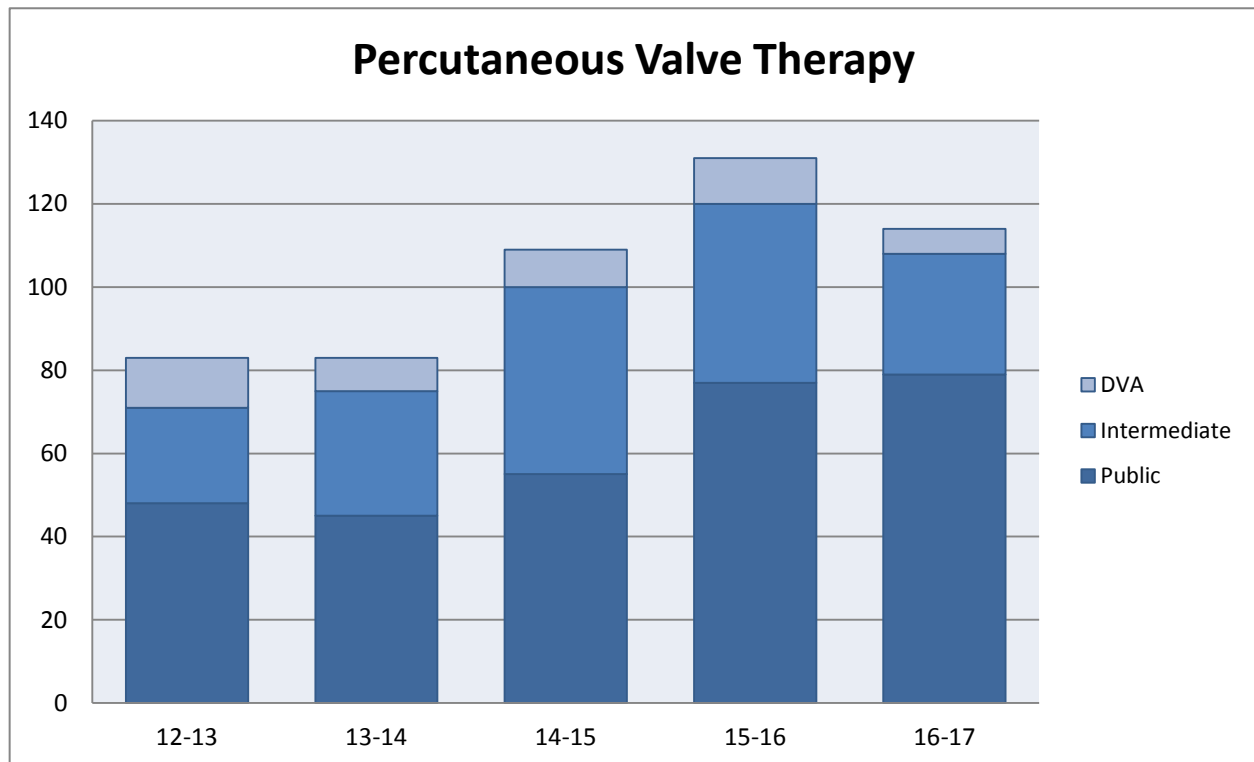
Financial Year	Total of PCI Procedures	% of Total Procedures
2013 – 2014	982	23.3
2014 – 2015	1069	24.6
2015 – 2016	954	22.7
2016 – 2017	1027	23.2



Structural Heart Procedures Performed

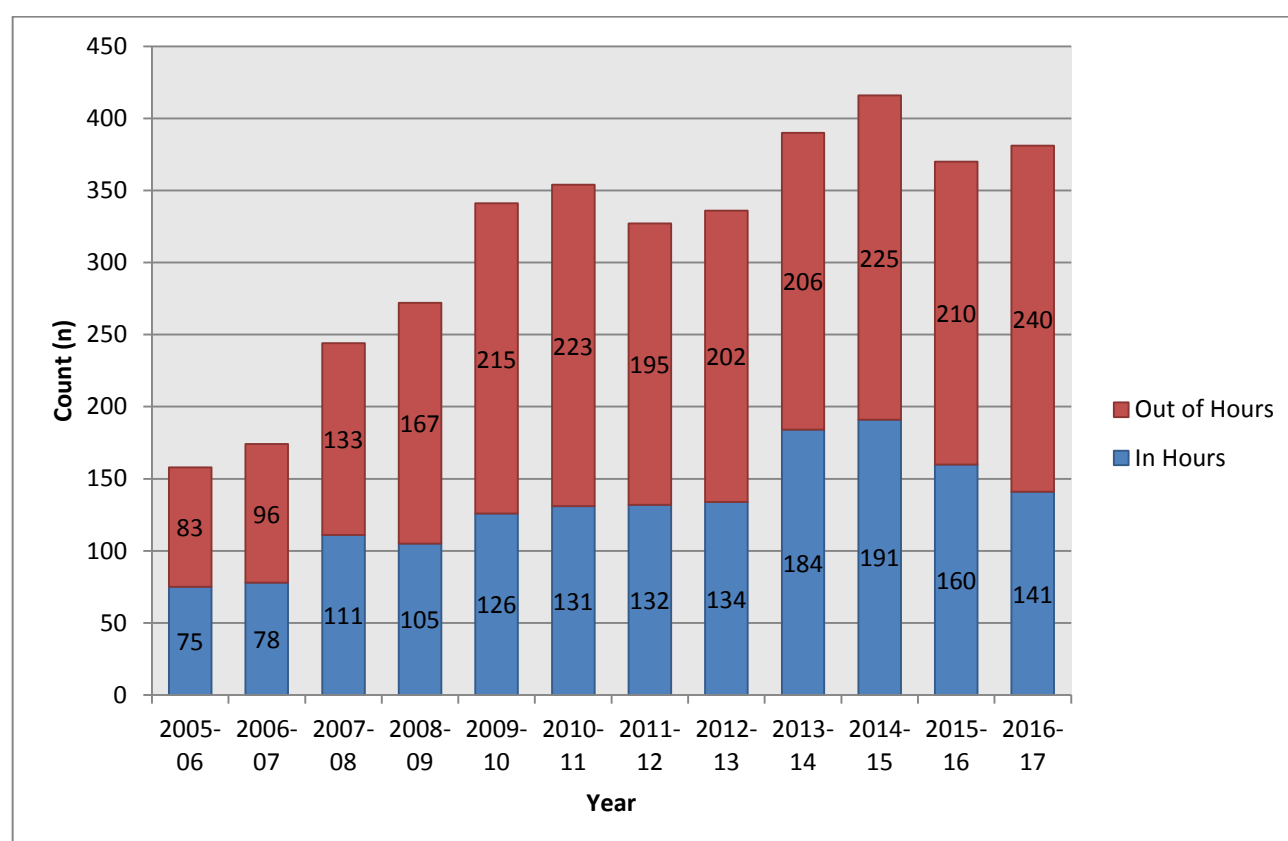
Procedure	2015-16			2016-17		
	Public	Private	Total	Public	Private	Total
ASD Closure	13	4	17	15	1	16
PFO Closure	17	3	20	11	2	13
LAA Closure	8	6	14	10	1	11
PDA Closure	1		1		1	1
VSD Closure	1		1		1	1
Coiling of PDA					1	1
Coronary Fistula Embolisation				2		2
Percutaneous closure of Paravalvular leak	5		5		2	2
Trans-femoral TAVI	47	27	74	62	24	86
Trans-apical TAVI	2	2	4	2		2
Trans-aortic TAVI	7	4	11	4	3	7
Trans-apical MVR	5	4	9	1		1
Percutaneous Repair of Mitral Valve - MitraClip	9	8	17	7	7	14
Percutaneous Repair of Mitral Valve - PASCAL				1		1
Trans-septal Edwards Mitral Valve Replacement					1	1
Percutaneous PVR	2	2	4			
Intra-Cardiac Ultrasound (ICE)	26	5	31	17	2	19
TOE	95	53	148	88	31	119
Transthoracic Echocardiogram	43	7	50	56	9	65
Aortic Valvuloplasty	121	45	166	119	19	138
Mitral Valvuloplasty	5		5	4	1	5
Pulmonary Valvuloplasty	1	2	3			
Tricuspid Valvuloplasty	1		1	1		1
Subclavian Stenting	2		2	2		2
Aortic Stenting	2	3	5		1	1
Subclavian Dilatation	1		1			
Pulmonary Dilatation	2	2	4	2		2
Pulmonary Artery Stenting				1		1
Renal Stenting	2		2	2	1	3
Vena Cava Dilatation		2	2			
Iliac Dilatation	1		1	1		1
Percutaneous Atrial septostomy	2		2			
Percutaneous Insertion of Pulmonary Arterial pressure monitoring device				9	1	10
REDUCE FMR Trial				2		2
Pulmonary Embolectomy				1		1

Structural Heart Procedures Performed



Additional Cases

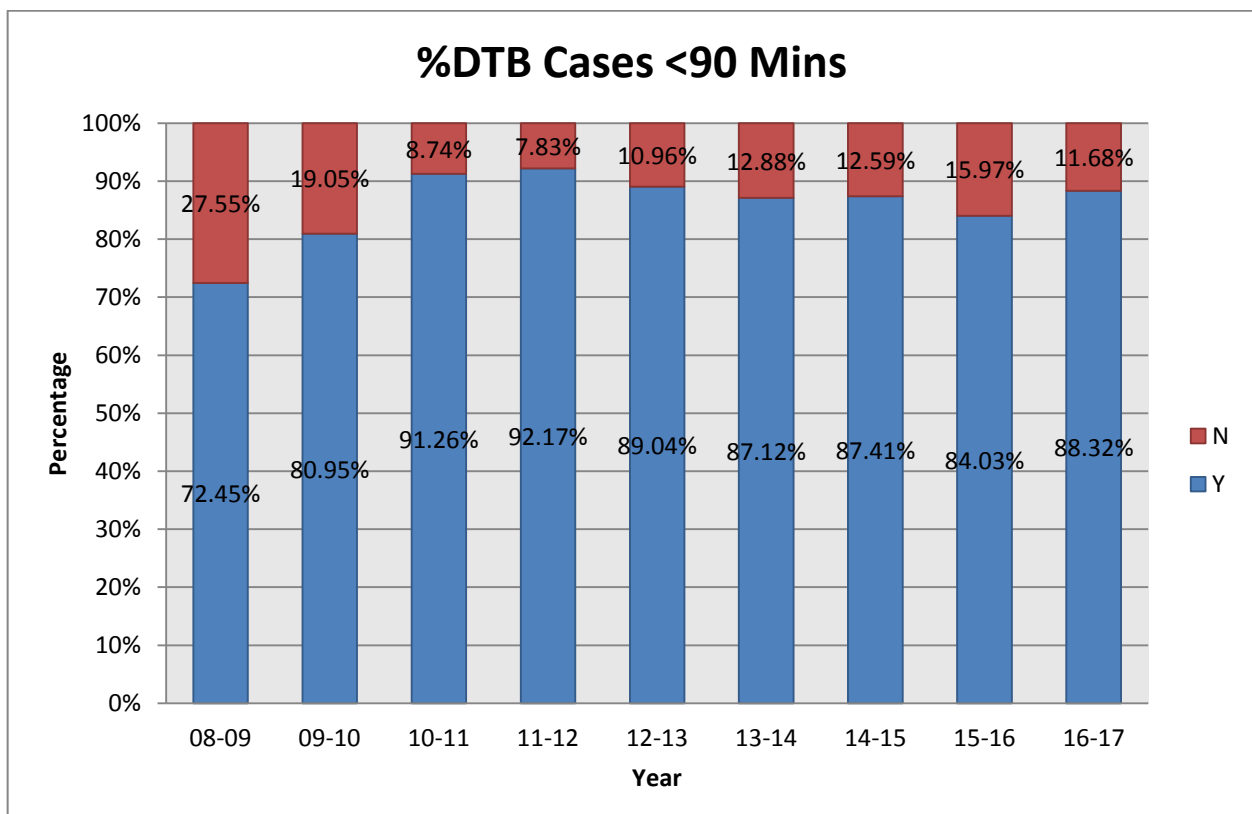
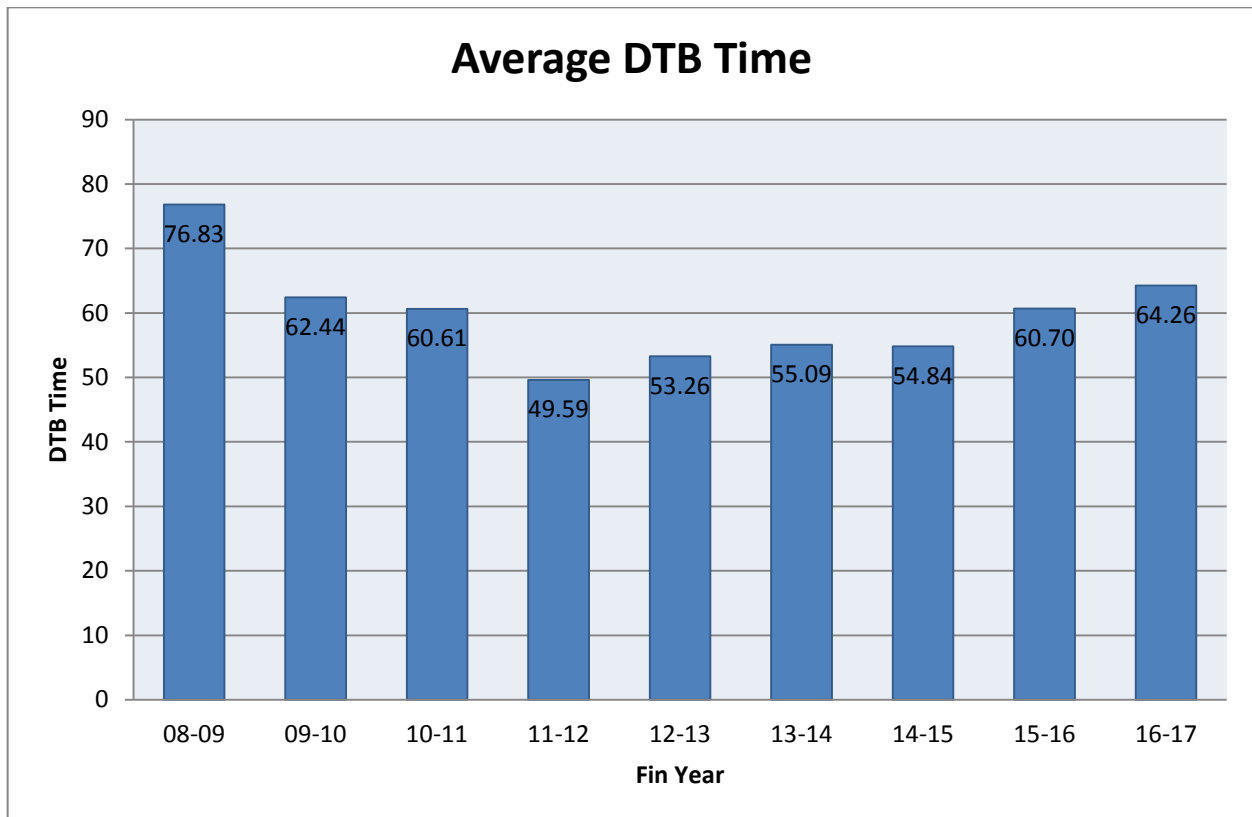
	2015-16	2016-17
Add-on Procedures	1723	1732
In Hours Emergency Add-ons (0800-1800)	160	141
Out of Hours Acute Call-ins (1800-0800)	210	240
Total	2093 (49.9%)	2113 (47.7%)



Angioplasty Nursing Service

	2015-16	2016-17
Occasions of PCI	1034	1027
Outpatient Follow Up		
7 Day	664	687
1 Month	840	1027
12 Month	-	745
Total	1504	2459

Primary PCI for STEMI



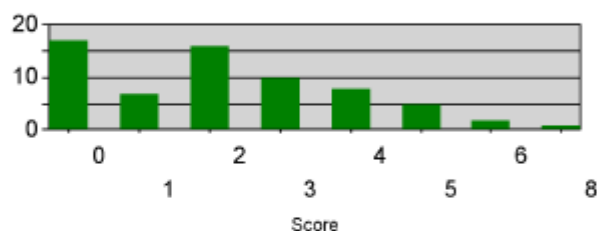
Inter-hospital Transfers

Total Transferred Referrals:	1071
Interventions	862
Medically-Treated	209

Average Age of Referrals:			Av 65.3 years	Dev +/- 12.9
Female	379	35.4%	66.2 years	12.9
Male	692	64.6%	64.8 years	12.9

Risk Calculations:

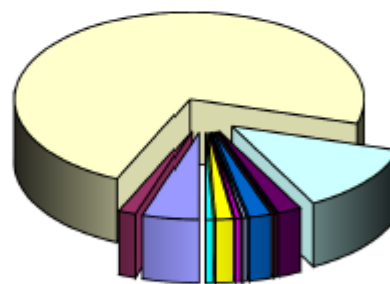
STEMI diagnosis - 66



NSTEMI diagnosis - 705



- STEMI with Fibrinolysis
- STEMI without Fibrinolysis
- NSTEMI with Troponin positive
- Unstable Angina
- Arrhythmia
- Cardiac Arrest
- Cardiac Failure
- Endocarditis/Myocarditis/Pericarditis
- Pericardial Effusion
- Stable Angina
- Valvular Heart Disease
- Other



Days Waiting from Referral to Transfer:

Total:	1071	100%	Av 49:54 hours	Dev +/- 42.1
Emergency	76	7.1%	10:12	8.4
Urgent	679	63.4%	41:51	31.4
Semi-Urgent	298	27.8%	73:57	48.7
Semi-Elective	17	1.6%	121:53	74.3
Elective	1	0.1%	141:49	

Inter-hospital Transfers

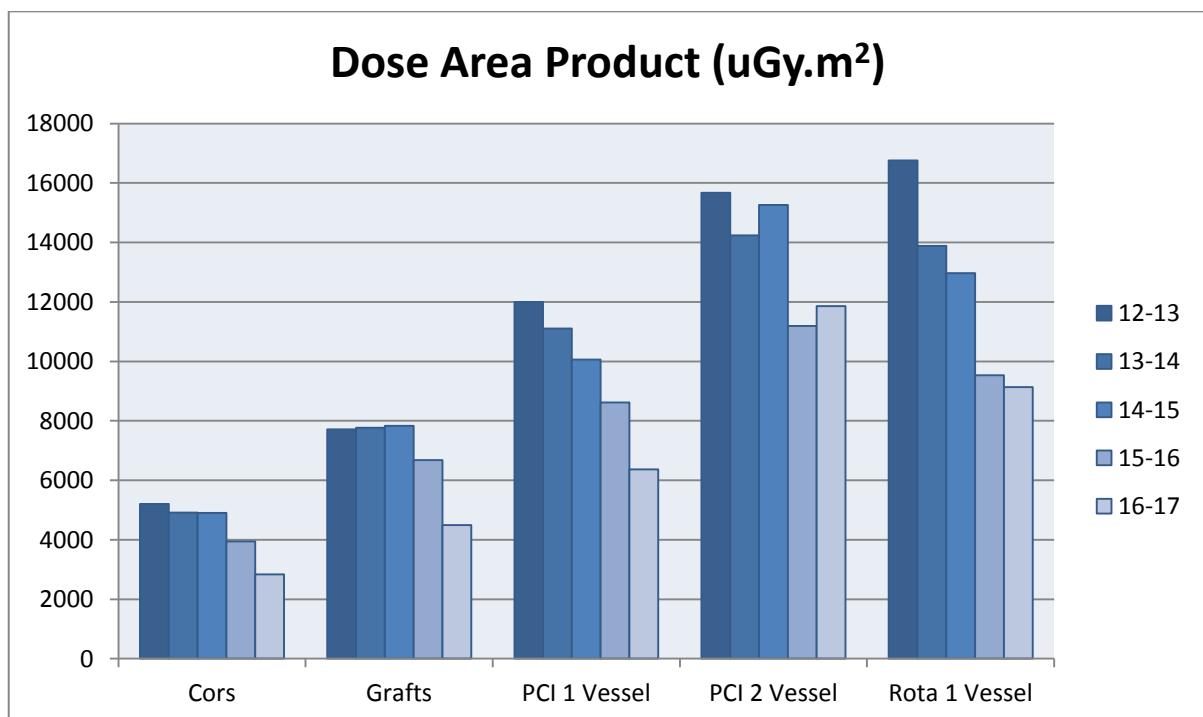
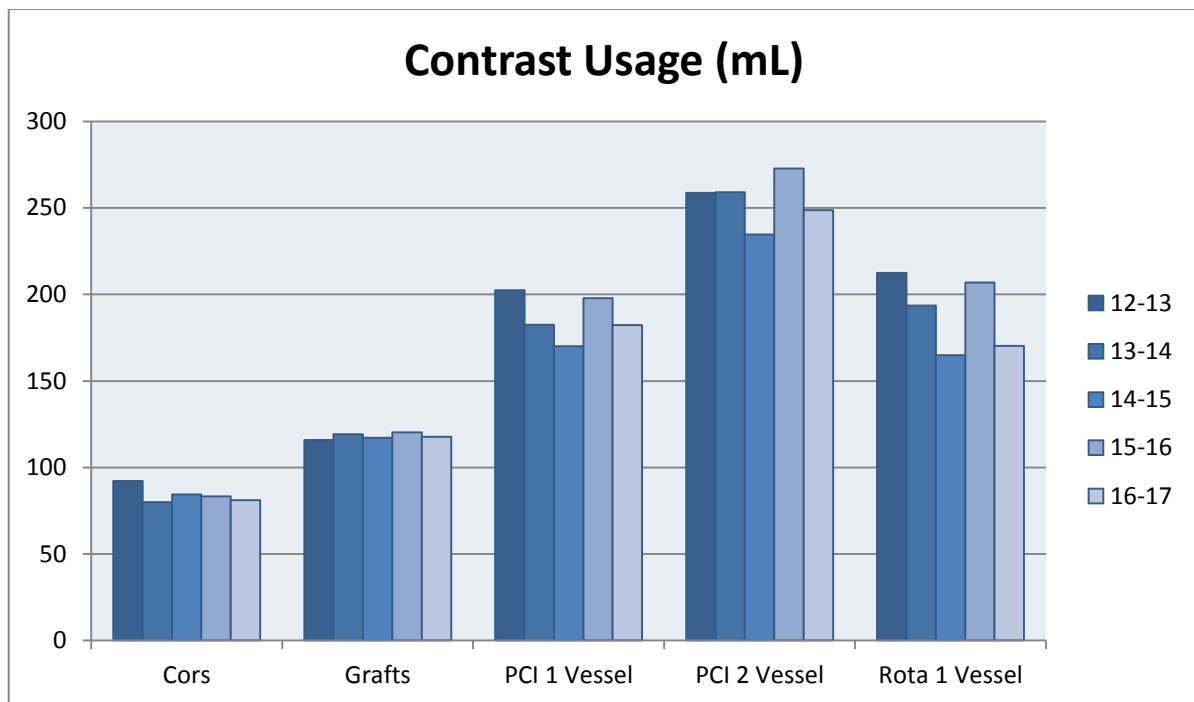
Clinical Diagnosis:	862	100%
STEMI with Fibrinolysis	44	5.1%
STEMI without Fibrinolysis	14	1.6%
NSTEMI with Troponin positive	627	72.7%
Unstable Angina	110	12.8%
Arrhythmia	19	2.2%
Cardiac Arrest	2	0.2%
Cardiac Failure	18	2.1%
Endocarditis/Myocarditis/Pericarditis	3	0.3%
Pericardial Effusion	1	0.1%
Stable Angina	4	0.5%
Valvular Heart Disease	14	1.6%
Other	6	0.7%

Medically-Treated:

Clinical Diagnosis:	209	100%
STEMI with Fibrinolysis	2	1%
STEMI without Fibrinolysis	6	2.9%
NSTEMI with Troponin positive	78	37.3%
Unstable Angina	21	10%
Aortic Dissection	1	0.5%
Arrhythmia	42	20.1%
Cardiac Arrest	1	0.5%
Cardiac Failure	16	7.7%
Dissection	2	1%
Endocarditis/Myocarditis/Pericarditis	12	5.7%
Pericardial Effusion	1	0.5%
Prosthetic Valve Occlusion	1	0.5%
Valvular Heart Disease	14	6.7%
Other	12	5.7%

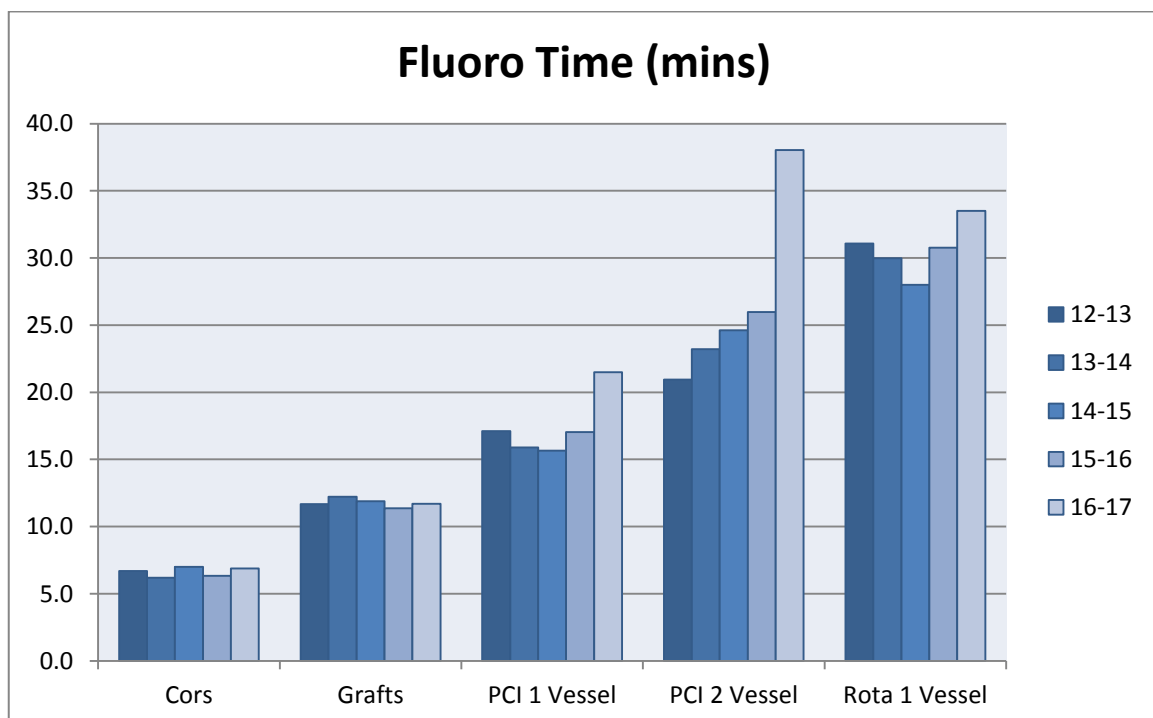
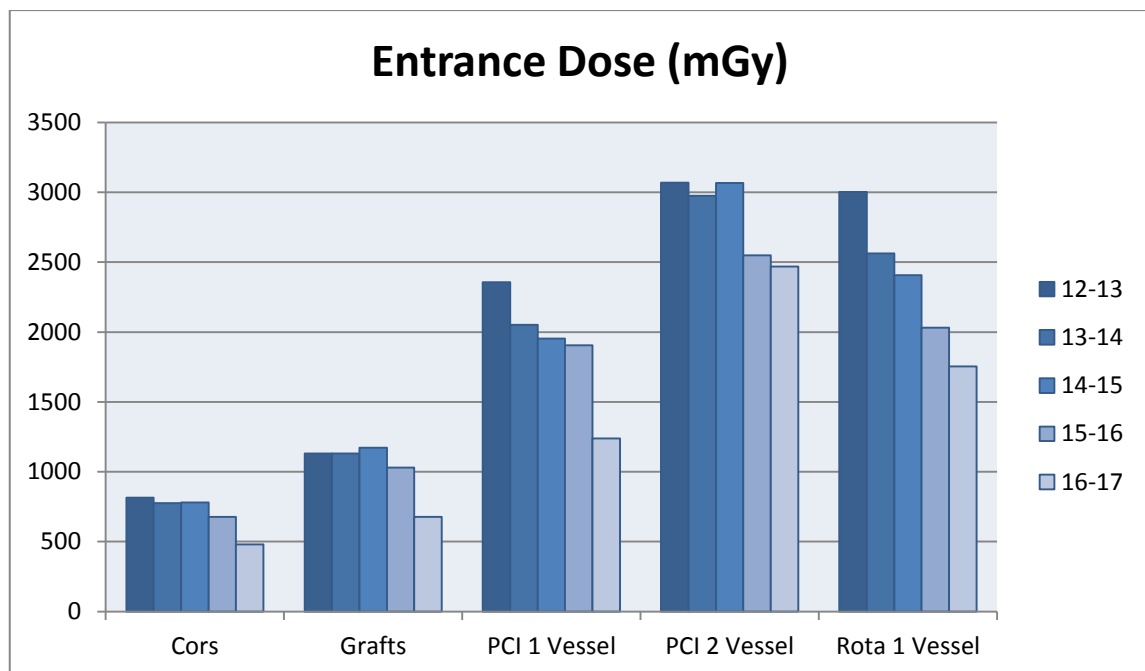
Patient Radiation Doses

	CORS	GRAFTS	PCI 1 Vessel	PCI >2 Vessel	Rota 1 Vessel
	Mean	Mean	Mean	Mean	Mean
Contrast (ml)	81.0	117.7	182.4	248.7	170.3
Dose Area Product (cGy*cm ²)	2834	4494	6372	11855	9133



Patient Radiation Doses

	CORS	GRAFTS	PCI 1 Vessel	PCI >2 Vessel	Rota 1 Vessel
	Mean	Mean	Mean	Mean	Mean
Entrance Dose (mGy)	481	677	1237	2468	1754
Fluoroscopy Time (min)	6.9	11.7	21.5	38.0	33.5

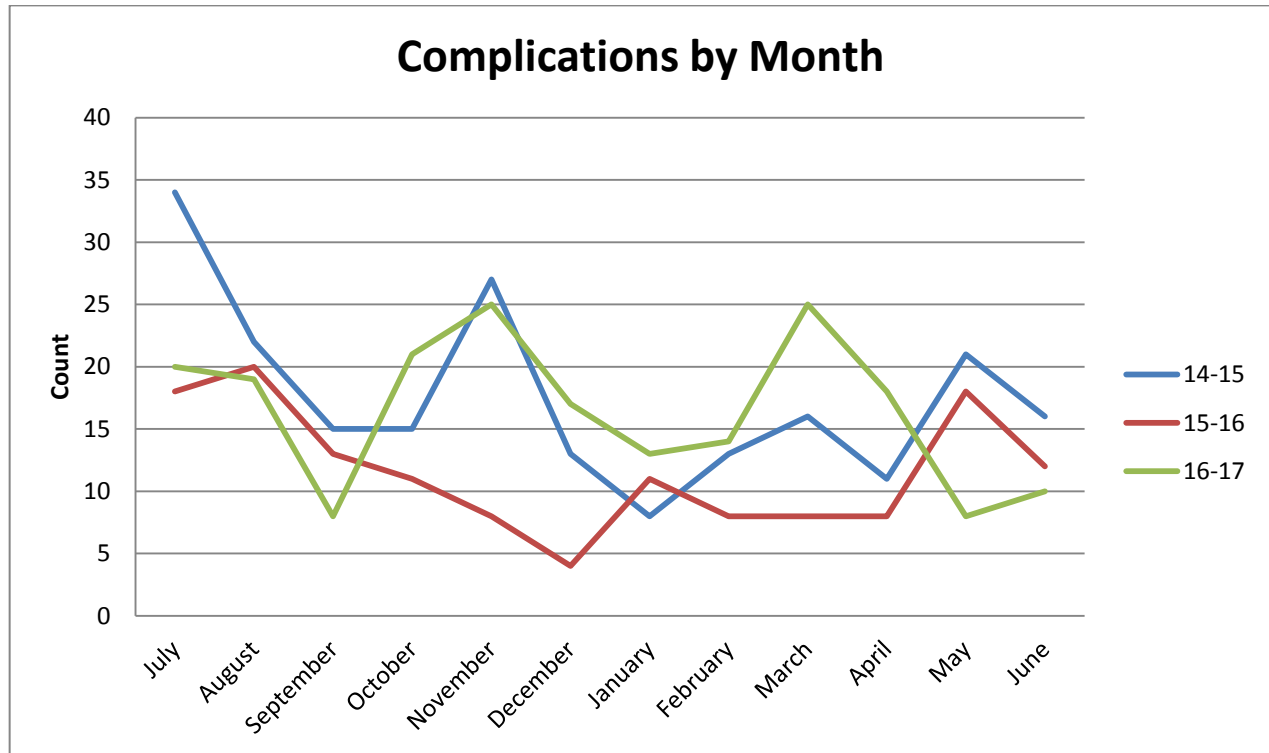


Complications

Total = 184 (4.15%)

Complications	2015-16	%	2016-7	%
Access Site Occlusion		0.00%	1	0.54%
Acute Respiratory Failure	1	0.81%	2	1.09%
Asystole	1	0.81%	10	5.43%
Atrial Fibrillation/Flutter	5	4.07%	11	5.98%
Bleeding - other cause	2	1.63%		0.00%
Bleeding at Percutaneous Entry Site	9	7.32%	5	2.72%
Cardiac Tamponade.		0.00%	2	1.09%
Cardiogenic shock.	2	1.63%	5	2.72%
Congestive Heart Failure.		0.00%	1	0.54%
Contrast reaction.	5	4.07%	3	1.63%
Coronary Dissection requiring treatment	6	4.88%	8	4.35%
Coronary Embolisation / Occlusion	1	0.81%		0.00%
CVA/stroke.	3	2.44%	1	0.54%
Emergency cardiac surgery post PCI.		0.00%	1	0.54%
Emergency return to the CCL post PCI		0.00%	1	0.54%
Heart Block	9	7.32%	18	9.78%
Hematoma >10cm.	5	4.07%	3	1.63%
Hematoma 5-10cm.	5	4.07%	5	2.72%
Hypotension	9	7.32%	20	10.87%
Other vascular complication requiring	3	2.44%	2	1.09%
Perforation of Coronary Artery	3	2.44%	1	0.54%
Peripheral Dissection	6	4.88%	4	2.17%
Peri-procedural MI.	1	0.81%		0.00%
Prolonged Angina	1	0.81%		0.00%
Pseudoaneurysm	1	0.81%		0.00%
Pulmonary Oedema	3	2.44%	5	2.72%
Radiation Dose Exceeded	9	7.32%	7	3.80%
RBC/Whole blood transfusion.	1	0.81%	2	1.09%
Retroperitoneal bleeding.		0.00%	1	0.54%
Supraventricular Tachycardia	1	0.81%	1	0.54%
Sustained Bradycardia		0.00%	8	4.35%
TIA		0.00%	1	0.54%
Vaso-vagal Reaction	14	11.38%	30	16.30%
Ventricular Fibrillation	7	5.69%	15	8.15%
Ventricular Tachycardia	8	6.50%	8	4.35%
Vomiting	2	1.63%	2	1.09%
Grand Total	123	100.00%	184	100.00%

Complications



Prof Darren Walters
Clinical Director
Cardiac Catheterisation Laboratory
Date:

Michael Savage
Consultant Cardiac Scientist
Cardiac Catheterisation Laboratory
Date:

APPENDIX A



THE PRINCE CHARLES HOSPITAL CARDIAC CATHETER LABORATORY

PCI Procedure Report

1/07/2016 - 30/06/2017



Patient Age

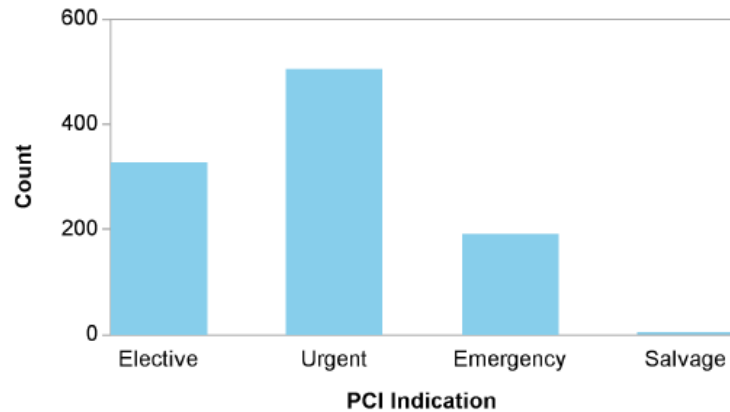
Male	778	75.24 %	Av 64 +/- 11
Female	256	24.76 %	Av 69 +/- 12
	1034	100%	Av 65 +/- 12

Previous Procedures

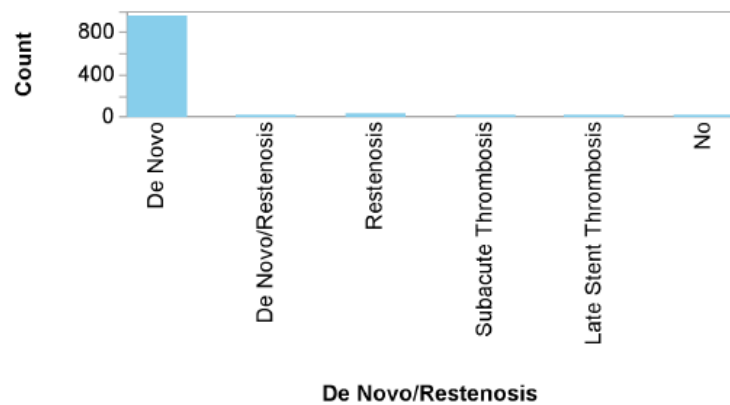
Previous Procedures	Number	% of total cases
Previous CABG	126	12.19 %
Previous PCI	240	23.21 %
Previous valvular surgery	23	2.22 %
	389	

Indications

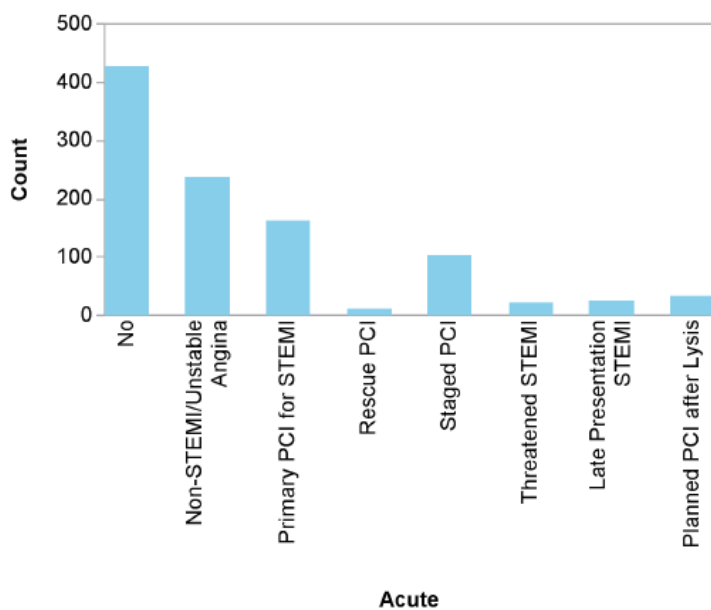
PCI Status	Number of Cases	%
Elective	327	31.84 %
Emergency	191	18.60 %
Salvage	4	0.39 %
Urgent	505	49.17 %
	1027	100%



De Novo/Restenosis	Number of Cases	%
De Novo	961	93.57 %
De Novo/Restenosis	11	1.07 %
Late Stent Thrombosis	5	0.49 %
No	6	0.58 %
Restenosis	41	3.99 %
Subacute Thrombosis	3	0.29 %
	1027	100%



Acute	Number of Cases	%
Late Presentation STEMI	26	2.53 %
No	429	41.77 %
Non-STEMI/Unstable Angina	237	23.08 %
Planned PCI after Lysis	34	3.31 %
Primary PCI for STEMI	162	15.77 %
Rescue PCI	12	1.17 %
Staged PCI	105	10.22 %
Threatened STEMI	22	2.14 %
	1027	100%



Cardiac Indications	Number of Indications	% of total cases
Angina.	35	3.38 %
Cardiogenic Shock.	3	0.29 %
Chest pain.	652	63.06 %
Exertional dyspnoea.	122	11.80 %
Known coronary artery disease.	339	32.79 %
NSTEMI.	242	23.40 %
Out of hospital arrest.	9	0.87 %
Positive CT Coronary Angiogram.	42	4.06 %
Positive EST.	35	3.38 %
Positive stress echo.	53	5.13 %
Previous MI	58	5.61 %
STEMI.	194	18.76 %
Thrombolysed STEMI.	42	4.06 %
Unstable angina.	12	1.16 %

1838

Risk Factors	Number of Factors	% of total cases
Anxiety	72	6.96 %
Cerebrovascular Disease	61	5.90 %
CHF	78	7.54 %
Chronic Lung Disease	157	15.18 %
Current smoker	244	23.60 %
Depression	131	12.67 %
Diabetes	287	27.76 %
Dyslipidemia	661	63.93 %
Family History	331	32.01 %
Hypertension	693	67.02 %
Obesity	421	40.72 %
Renal Failure	69	6.67 %

3205

Lesions Risk	Number	% of total cases
Type A Lesion	49	4.74 %
Type B1 Lesion	221	21.37 %
Type B2 Lesion	438	42.36 %
Type C Lesion	526	50.87 %
	1234	

Approach	Number	% of total cases
Brachial	2	0.19 %
Femoral	383	37.04 %
Radial	642	62.09 %
	1027	100%

Complications	Number	% of total cases
Acute Respiratory Failure	2	0.19 %
Asystole	5	0.48 %
Atrial Fibrillation/Flutter	3	0.29 %
Bleeding at Percutaneous Entry Site	1	0.10 %
Cardiogenic Shock	4	0.39 %
CHF	1	0.10 %
Coronary Dissection	8	0.77 %
Emergency CABG	1	0.10 %
Heart Block	8	0.77 %
Hematoma at Access Site	16	1.55 %
Hypotension	8	0.77 %
Perforation of Artery	1	0.10 %
Pulmonary Oedema	5	0.48 %
Radiation Dose Exceeded	6	0.58 %
Sustained Bradycardia	7	0.68 %
Unplanned Return to CCL	1	0.10 %
Vaso-vagal	9	0.87 %
Ventricular Fibrillation	7	0.68 %
Ventricular Tachycardia	7	0.68 %
Vomiting	2	0.19 %
	102	

Technical Data and Lesion Characteristics

Stent Type	Number	%
Bare Metal Stent	38	2.49 %
Covered Stent	1	0.07 %
Drug Eluting Stent	1487	97.44 %
	1526	100%

Technical Data and Lesion Characteristics

Guide Size	Number	%	Balloon Size	Number	%
Null	1	0.06 %	Null	1	0.03 %
0.014	1	0.06 %	1.00	5	0.13 %
5	31	2.01 %	1.10	9	0.23 %
5.5	7	0.45 %	1.20	5	0.13 %
6	1227	79.47 %	1.25	35	0.91 %
7	229	14.83 %	1.50	144	3.76 %
7.5	4	0.26 %	2.00	534	13.94 %
8	44	2.85 %	2.25	37	0.97 %
	1544	100%	2.50	1080	28.18 %
			2.75	162	4.23 %
			3.00	723	18.87 %
			3.25	158	4.12 %
			3.50	495	12.92 %
			3.75	55	1.44 %
			4.00	246	6.42 %
			4.50	107	2.79 %
			5.00	29	0.76 %
			5.50	4	0.10 %
			6.00	3	0.08 %
				3832	100%

Technical Data and Lesion Characteristics

Stent Width	Number	%	Stent Length	Number	%
2.00	11	0.72 %	8	57	3.71 %
2.25	183	11.90 %	9	4	0.26 %
2.50	329	21.39 %	12	138	8.97 %
2.75	149	9.69 %	13	11	0.72 %
3.00	459	29.84 %	14	2	0.13 %
3.25	10	0.65 %	15	169	10.99 %
3.50	285	18.53 %	16	121	7.87 %
4.00	104	6.76 %	18	219	14.24 %
4.50	3	0.20 %	20	92	5.98 %
5.00	2	0.13 %	22	48	3.12 %
30.00	2	0.13 %	23	151	9.82 %
40.00	1	0.07 %	24	69	4.49 %
	1538	100%	25	1	0.07 %
			26	34	2.21 %
			28	151	9.82 %
			30	26	1.69 %
			32	45	2.93 %
			33	58	3.77 %
			34	4	0.26 %
			38	114	7.41 %
			48	24	1.56 %
				1538	100%

30 Day Outcomes

Quality of Life	Number	%
Better	1002	91.84 %
No Improvement	65	5.96 %
Worse	24	2.20 %
	1091	100%

Cardiac Rehab Attended	Number	%
Attended	561	54.31 %
Not Attended	472	45.69 %
	1033	100%

Exercise Compliance	Number	%
No	177	17.52 %
Yes	833	82.48 %
	1010	100%

Angina	Number	%
Class I (Strenuous Activity)	57	5.23 %
Class II (Ordinary Activity)	48	4.41 %
Class III (Marked Limitations)	23	2.11 %
Class IV (At Rest)	52	4.78 %
No Pain	908	83.38 %
Unknown	1	0.09 %
	1089	100%

Access Site	Number	%
Bruising	5	41.67 %
Haematoma	2	16.67 %
Persistent Pain	5	41.67 %
	12	100%

Smoking	Number	%
Recommended Smoking at One Month Post Procedure	25	86.21 %
Referred to Quit Programme	4	13.79 %
	29	100%

Medication Compliance	Number	%
No	3	0.32 %
Yes	934	99.68 %
	937	100%

Adverse Events	Number	%
Emergency PCI	2	100.00 %
	2	100%