

Report for European Heart Rhythm Association

Country United Kingdom
Year 2005
Population 60.2 million



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Summary of Device Usage: Total Implants

Year	PM	ICD	CRT-P	CRT-D
1980	4,787	18		
1981	5,488	16		
1982	6,995	19		
1983	7,700	4		
1984	8,398	10		
1985	9,242	10		
1986	9,819	7		1
1987	10,657	5		
1988	10,488	20		
1989	11,801	44		
1990	13,287	83		
1991	14,449	156	1	
1992	16,053	199		
1993	17,118	188		
1994	18,880	253		
1995	20,462	365	1	
1996	22,497	594		
1997	23,337	627		
1998	23,663	939	8	
1999	24,395	1,099	52	11
2000	26,413	1,348	109	63
2001	28,826	1,810	286	132
2002	28,891	2,329	352	264
2003	31,268	2,803	490	542
2004	34,461	3,172	814	845
2005	36,303	3,776	964	1,271

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report compiled by:



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Heart Disease Project Manager

Central Cardiac Audit Database

07753 682686

CCAD is part of the
National Clinical Audit Support Programme
(NCASP) and is based in the NHS

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Health and Social Care
Information Centre

on: **07/03/2007**

Country **United Kingdom**
Year **2005**
Population **60.21** million

PM Total Implants **36,303** **602.9** per million population

registered: 28,861

PM New Implants: **26,930** **447.3** per million population

registered: 21,409

PM Replacements: **9,374** **155.7** per million population

registered: 7,452

Implanting centres **191**

DB established: **1977**

Estimated completeness **100.0%**

PM in DB at end of year **471,833**

Patients in follow up **257,131**

	All		Male		Female
New implants:	26,930		12,013		14,917
Mean age new implants	75.5	years	74.7	years	76.7 years

Database director: **Dr A D Cunningham**

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Primary Symptom at Initial Implant

		%
A1	UNSPECIFIED	5.9%
B1	SYNCOPE	40.2%
B2	DIZZY SPELLS	28.0%
B3	BRADYCARDIA	13.0%
C1	TACHYCARDIA	1.8%
D1	NONE/PROPHYLACTIC	4.1%
D2	HEART FAILURE/DYSPNOEA	6.0%
D3	CEREBRAL DYSFUNCTION	0.2%
D4	CHEST PAIN	0.7%
D5	ABORTED SUDDEN DEATH	0.1%

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Pre-pacing ECG: New Implants

	%
A1-2 unspec uncoded	2.7%
B1 norm sinus rhythm	4.9%
B2 NSR + abnormal EPS	0.4%
C1-C4 I-II degree AVB	14.7%
C5-C8 III degree AVB	28.0%
D1-D12 BBB	4.9%
E1-E5 SSS	26.2%
E6 Chronic AF/AFL + bradycardia	16.7%
E7 Interatrial block	0.1%
E8 Chronotropic incompetence	0.2%
F1-3 Supraventricular tachycardia	0.6%
G1 Ventricular extrasystoles	0.0%
G2-3 Ventricular extrasystoles	0.6%
G4 Torsades de pointes	0.1%

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Pacing Mode: New Implants

	%
AAI Atrial Demand	0.51%
AAIR Atrial Demand Rate Responsive	0.90%
DDD Dual chamber	26.61%
DDDR Dual chamber rate responsive	27.47%
DDI Dual chamber Non-Triggered	0.71%
DDIR Dual chamber Non-Triggered rate responsive	0.25%
VDD P-wave synchronous ventricular inhibited	0.64%
VDDR P-wave synchronous ventricular inhibited rate resp	0.16%
VOO Ventricular Asynchronous	0.02%
VVI Ventricular Demand	15.48%
VVIR Ventricular Demand Rate Responsive	23.54%
CRT-P Biventricular	3.72%

Average Pacemaker Price

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Mode vs pre-Pacing ECG: New Implants

ECGGroup	VVI	AAI	DDD	VDD	CRTD
A1-2 unspec uncoded	41.4%	1.9%	53.1%		3.5%
B1 norm sinus rhythm	25.3%	2.0%	71.1%	0.1%	1.4%
B2 NSR + abnormal EPS	27.9%		70.5%		1.6%
C1-C4 I-II degree AVB	22.9%	0.5%	74.4%	1.8%	0.4%
C5-C8 III degree AVB	38.6%	0.1%	59.2%	1.7%	0.4%
D1-D12 BBB	20.3%	0.9%	58.7%	0.5%	19.6%
E1-E5 SSS	23.3%	4.1%	72.1%	0.2%	0.1%
E6 Chronic AF/AFL + bradycardia	90.0%	0.1%	8.7%	0.0%	1.2%
E7 Interatrial block	50.0%		50.0%		
E8 Chronotropic incompetence	25.0%	12.5%	59.4%		3.1%
F1-3 Supraventricular tachycardia	33.7%	1.2%	64.0%		1.2%
G1 Ventricular extrasystoles	16.7%		83.3%		
G2-3 Ventricular extrasystoles	41.4%	3.4%	51.7%		3.4%
G4 Torsades de pointes	28.6%	14.3%	57.1%		

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Rate responsive sensors

	%
Activity	84.42%
Activity or Respiration	9.08%
Activity/impedance blend	0.49%
Activity/QT blend	1.56%
Activity/Respiration blend	4.42%
Respiration	0.03%

Market share

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Primary Aetiology at Initial Implant

		%
A1	UNSPECIFIED	15.6%
B1	UNKNOWN	42.8%
B2	CONDUCTION TISSUE FIBROSIS	28.6%
C1	ISCHAEMIC	3.3%
C2	POST INFARCTION	0.9%
D1	CONGENITAL UNSPECIFIED	0.5%
E1	SURGICAL COMPLICATION	1.6%
E2	SURGICAL THERAPEUTIC (ABLATION)	0.6%
E3	CATHETER ABLATION UNSPECIFIED	0.9%
E4	DRUG INDUCED	0.2%
F1	CAROTID SINUS SYNDROME	1.9%
F2	VASOVAGAL SYNDROME	0.8%
F3	ORTHOSTATIC HYPOTENSION	0.0%
G1	CARDIOMYOPATHY UNSPECIFIED	0.5%
G1A	HYPERTROPHIC CARDIOMYOPATHY	0.3%
G1B	DILATED CARDIOMYOPATHY	0.5%
G2	MYOCARDITIS	0.0%
G3	VALVULAR HEART DISEASE	1.0%
G6	ENDOCARDITIS	0.0%
G7	HEART TRANSPLANT	0.0%
G8	IONISING RADIATION	0.0%

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Pacemaker File Closures

	%
A1 UNSPECIFIED	2.61%
B1 DEATH UNRELATED TO PACEMAKER	18.86%
B2 DEATH RELATED TO PACEMAKER	0.09%
B3 DEATH - SUDDEN	0.55%
B4 DEATH - CAUSE UNKNOWN	62.46%
B5 DEATH - LEAD RELATED	0.02%
C1 LOST TO FOLLOW-UP	1.28%
C2 HOSPITAL TRANSFER	12.89%
C3 PACEMAKER REMOVED	1.22%

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Generator Explants

	%
A1 UNSPECIFIED	3.64%
B1 ELECTIVE	25.02%
B2 RECALL	4.01%
B3 SYSTEM CHANGE - HEMODYNAMIC	2.69%
B4 SYSTEM CHANGE - PACER SYNDROME	0.49%
B5 SYSTEM CHANGE - PALPITATIONS	0.12%
B6 SYSTEM CHANGE - ELECTRODE PROBLEM	1.29%
B8 EXTRACARDIAC STIMULATION	0.09%
C1 MECHANICAL PROTRUSION	0.06%
C2 EROSION	0.89%
C3 INFECTION	2.30%
C4 WOUND PAIN	0.12%
D1 MINOR FAILURE - UNSPECIFIED	0.12%
D2 MINOR FAILURE - UNDERSENSING	0.12%
D3 MINOR FAILURE - OVERSENSING	0.06%
D4 MINOR FAILURE - MAGNETIC SWITCH	0.06%
D5 MINOR FAILURE - PROGRAMMING	0.03%
E1 MAJOR FAILURE - UNSPECIFIED	0.28%
E2 MAJOR FAILURE - NO OUTPUT	0.18%
E4 MAJOR FAILURE - SLOW RATE	0.03%
E5 MAJOR FAILURE - FAST RATE	0.06%
E6 MAJOR FAILURE - CONNECTOR	0.12%
E7 MAJOR FAILURE - ENCAPSULATION	0.15%
F1 BATTERY FAILURE - NORMAL EOL	57.10%
F2 BATTERY FAILURE - PREMATURE EOL	0.95%

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Lead Explants

	Atrial	Ventricular
A1 UNSPECIFIED	10.23%	10.65%
B1 ELECTIVE	25.12%	20.97%
B2 DISPLACEMENT	31.16%	22.26%
B3 EXIT BLOCK	2.33%	5.16%
B4 EMG INHIBITION		
B5 EXTRACARDIAC STIMULATION	0.47%	0.32%
B6 PERFORATION	0.47%	2.26%
B7 UNDERSENSING	1.40%	1.94%
B8 RECALL	1.86%	0.97%
C1 INFECTION - ULCERATION	20.47%	20.65%
D1 CONNECTOR FAILURE		0.32%
D2 INSULATION BREAK	5.12%	8.39%
D3 CONDUCTOR BREAK	1.40%	6.13%

Lead Extractions

No information is currently available on the success rate or complication rate of lead extraction in the United Kingdom.

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Lead polarity: ventricular

BIPOLAR	99.63%
UNIPOLAR	0.37%

Lead polarity: atrial

BIPOLAR	98.9%
UNIPOLAR	1.1%

Lead polarity: coronary sinus

Bipolar	97.4%
UNIPOLAR	2.6%

Lead fixation: ventricular

Active	10.67%
Passive	89.33%

Lead fixation: atrial

Active	15.1%
Passive	84.9%

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Patient Age - New Implants

Age group at time of new implant	%
0-4	0.17%
5-9	0.11%
10-14	0.12%
15-19	0.23%
20-24	0.30%
25-29	0.33%
30-34	0.41%
35-39	0.53%
40-44	0.88%
45-49	1.26%
50-54	1.87%
55-59	3.64%
60-64	5.56%
65-69	9.31%
70-74	14.60%
75-79	19.37%
80-84	20.39%
85-89	13.59%
90-94	5.95%
95-99	1.28%
100-104	0.09%
105-109	0.02%

Patients aged 100 or over at implant (first or replacement): 35

Pacemaker Re-Use

Pacemakers are not allowed to be re-used in the United Kingdom.

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ICD Total Implants: **3,776** **62.7** per million population

ICD New Implants: **2,835** **47.1** per million population

ICD Replacements: **941** **15.6** per million population

ICD Implant centres **72**

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RF Ablations:

Ablation centres:	42
Total # ablations:	7,344