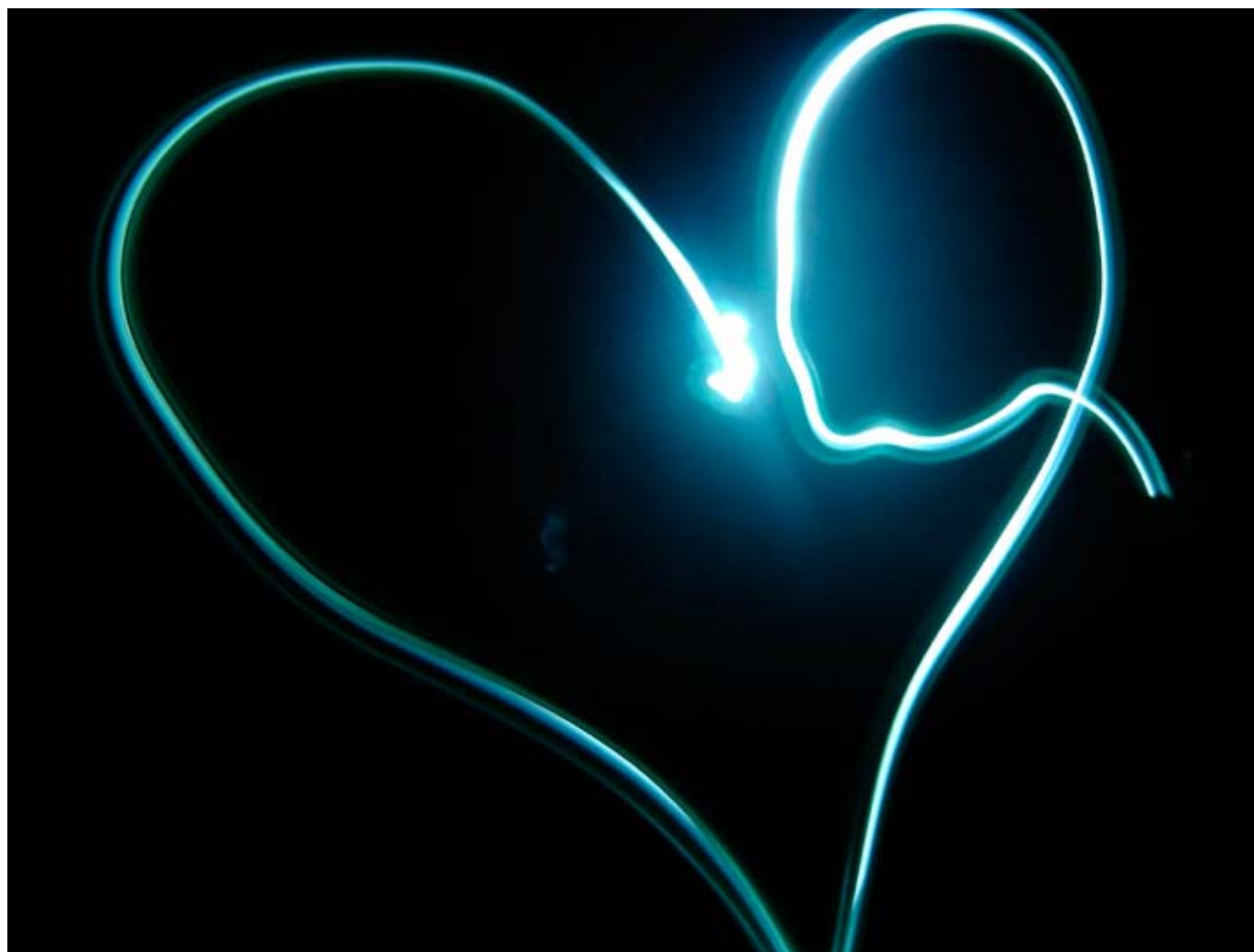


National Coronary Angioplasty Audit

Executive Summary

Key findings from the Angioplasty and Stents to treat Heart Disease 2007 report of the National Audit of Percutaneous Coronary Intervention in the United Kingdom

Data from January 2006 to December 2006, Peter F Ludman on behalf of the
British Cardiovascular Intervention Society



Prepared in association with:

Executive Summary

Coronary heart disease accounts for about one in five deaths in men and one in six deaths in women. In addition, the British Heart Foundation estimate that there are over 1 million men living in the UK who have or have had angina (heart-related chest pain), and over 840,000 women.

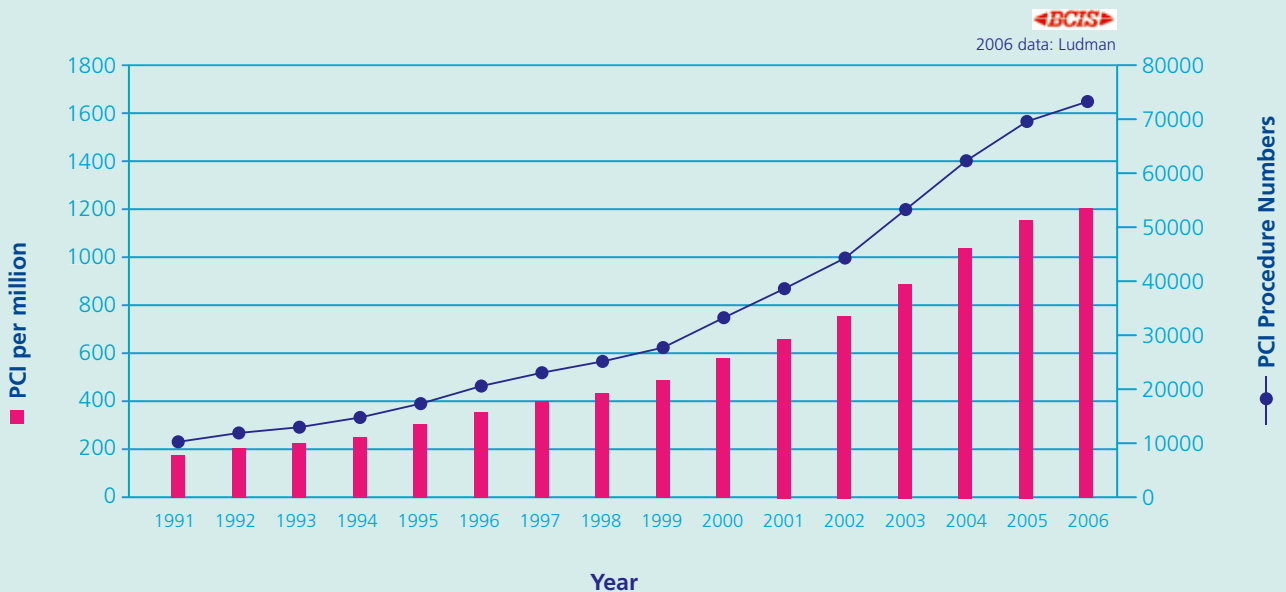
Percutaneous Coronary Intervention (PCI) is a rapidly evolving technique used to treat patients whose coronary arteries – which supply the heart with blood – are narrowed or blocked. The procedure works by mechanically improving blood flow to the heart. First, the doctor uses x-ray images of the heart arteries to make the position and shape of any narrowing or blockages visible (a 'coronary angiogram'). If the clinical circumstances and the angiogram findings suggest that something needs to be done to physically modify the blood flow to the heart, then the majority of patients are treated by PCI¹. A small balloon is inserted which, when inflated, squashes the fatty tissue out of the way and widens the artery. In most cases a 'stent' is then implanted – a stainless steel mesh tube that stays permanently in place to keep the artery wall open. Treatment thus aims to prevent the arteries blocking (which might cause a heart attack) and improve flow to the heart muscle to alleviate the symptoms of angina.

The audit described here allows clinicians to assess key aspects of the quality of their care when performing coronary angiogram and PCI. This is a United Kingdom wide audit performed by the Audit Officer of the British Cardiovascular Intervention Society (BCIS). This audit has recently been enhanced by the Central Cardiac Audit Database (CCAD) which allows electronic transfer of much more detailed information. This data collection and analysis for centres in England and Wales has project management and specialist IT support provided by the National Clinical Audit Support Programme (NCASP), which is part of The NHS Information Centre for health and social care. This portion of the audit is funded by the Healthcare Commission.

Key findings include:

- The number of PCIs in the UK was 1,216 per million population (pmp). These numbers are less than in most other developed European countries. The number of angiograms and PCI procedures are also less than that recommended by the British Cardiovascular Society (BCS), but both exceed the numbers expected by the National Service Framework (NSF) for Coronary Heart Disease. For PCIs, the NSF target in 2000 was 750 (pmp), and the BCS 2003 target was 1,400 pmp, with expectations that the level might need to be 2-3,000 pmp.

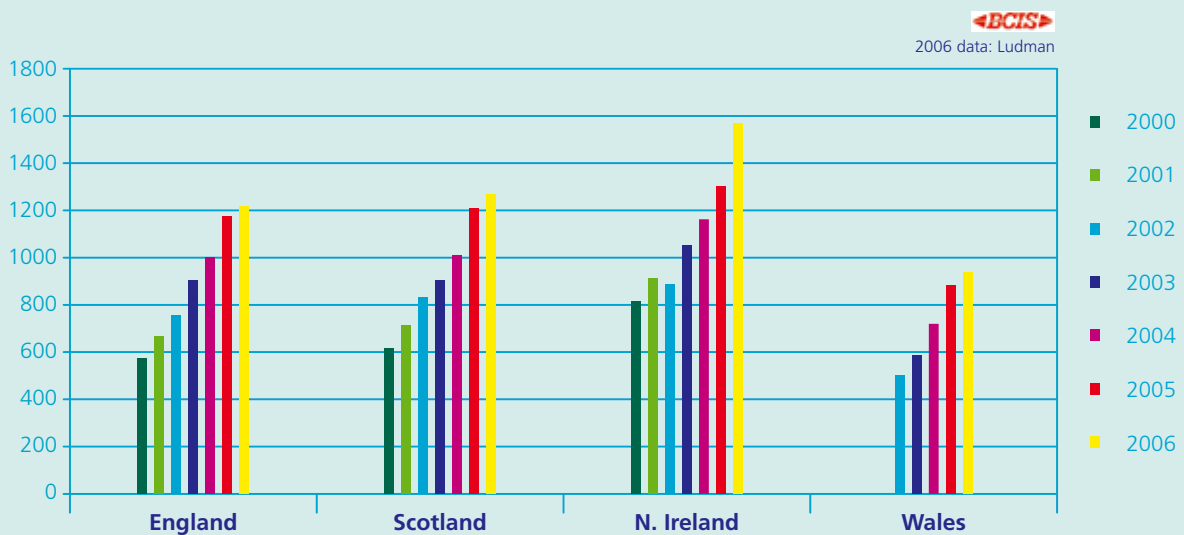
Figure 1: PCI activity to 2006 UK



Although there has again been an increase in PCI activity in all the UK countries, there remain large differences between these countries, with the

poorest provision in Wales at 943 pmp compared with the highest in Northern Ireland at 1559 pmp.

Figure 2: PCIs/million UK Countries



The rate of increase in overall number of PCI procedures performed has fallen, and was the lowest increase since records began in 1992.

Centre size: there is evidence that suggests improved outcomes for patients being treated in higher volume PCI centres, particularly those that perform at least 400 procedures pa. This forms part of the Joint Working Group on PCI of BCIS and the British Cardiac Society recommendations.

In 2006, the majority of units were performing considerably more than the recommended minimum. Of the 23 units performing less than 400 cases pa, the majority were new units undertaking a gradually increasing volume of work.

Figure 3: Number of PCIs performed in 2006

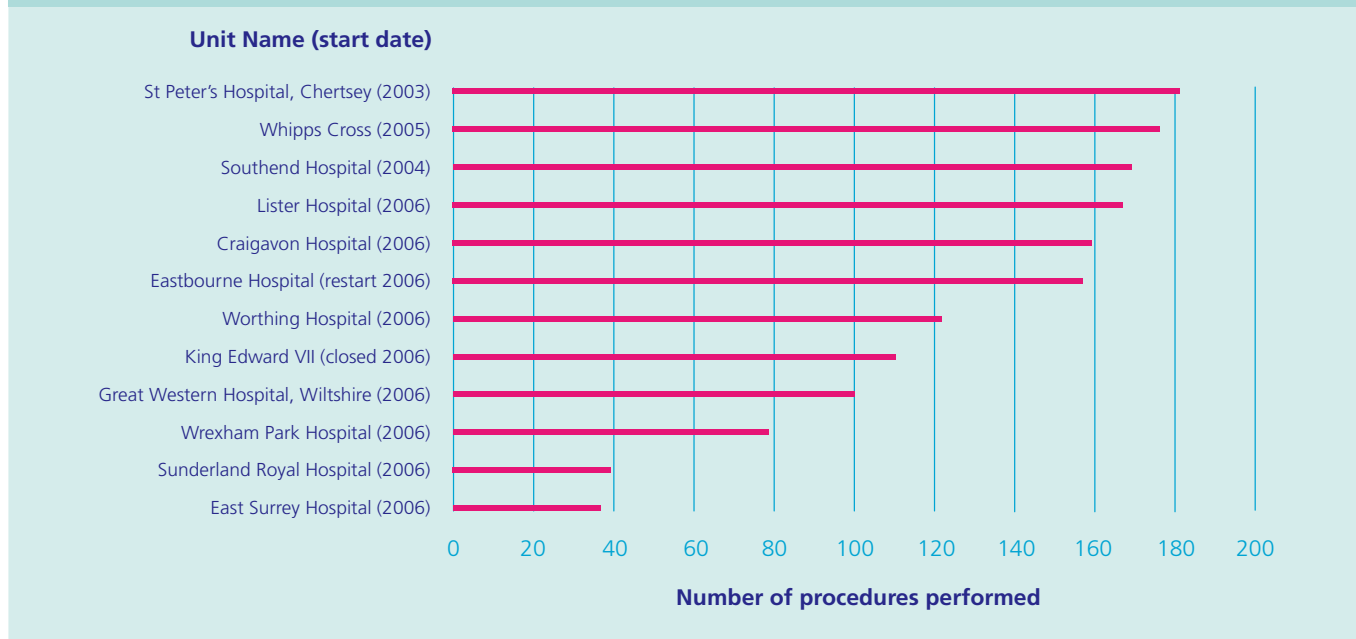


Figure 4: Number of PCIs performed in 2006



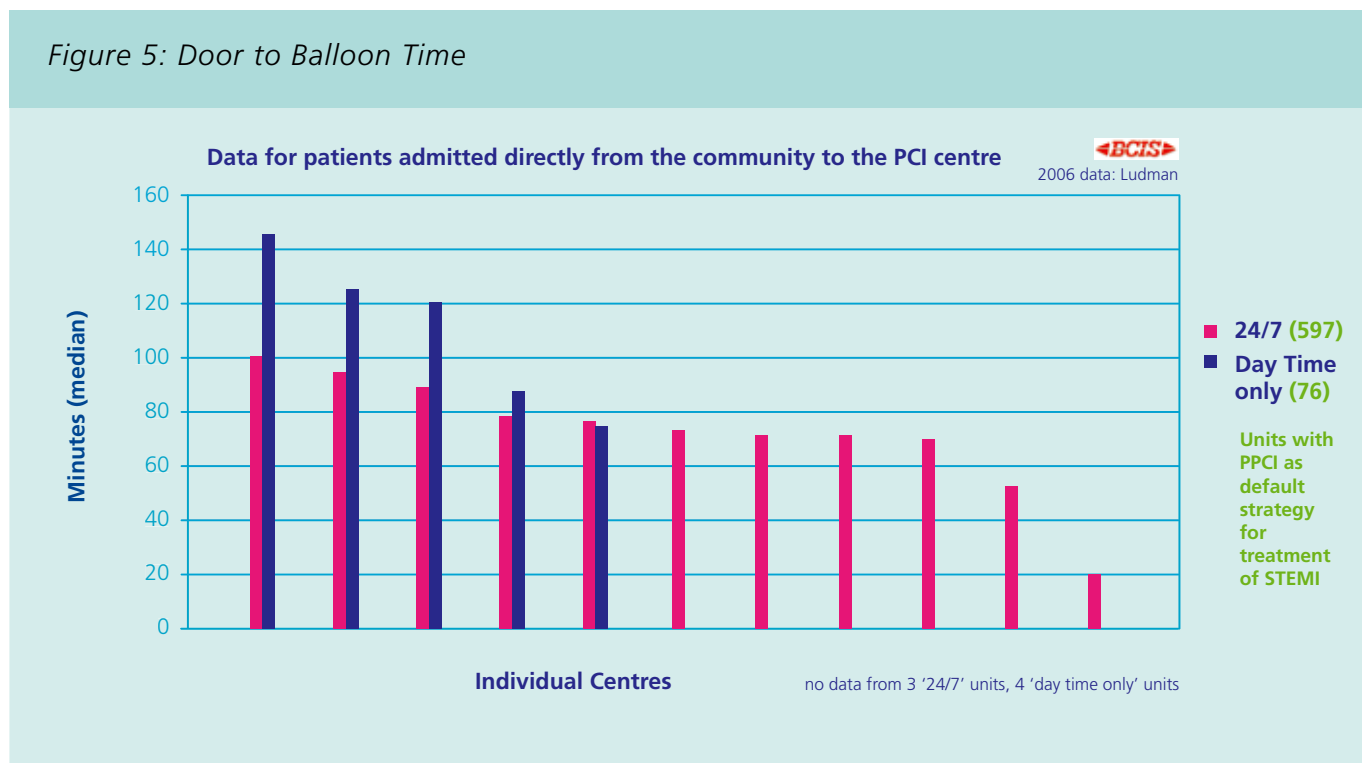
The National Institute for Health and Clinical Excellence (NICE) recommend that “Stents should be used routinely where PCI is the clinically appropriate procedure for patients with either stable or unstable angina or with acute myocardial infarction²”. The great majority of procedures do now involve stent insertion (94 per cent), suggesting that this aspect of good practice is being met.

61 per cent of the stents inserted in England, and 80 per cent of those in Wales, were coated with a drug designed to pass into the wall of the artery to improve the longer term success rates of the procedure (these coated stents are called drug-eluting stents). The National Institute for Health and Clinical Excellence (NICE) recommend that “A drug-eluting stent should be used if the person has angina, and the inside diameter of the artery is less than 3 mm across, or the narrowed area is more than

15 mm long³”. Research suggests that compliance with the NICE guidance on use of such stents would result in about 76 per cent of patients being treated with a drug eluting stent, which is in keeping with the rates observed in this audit and suggests that recommended practice is being followed.

National and International guidelines recommend that in the emergency treatment of patients with ST elevation MI, angioplasty treatment should be performed within 90 minutes of arrival of the patient at the angioplasty site. For the first time the CCAD data were used to measure unit’s ability to deliver treatment in this time frame. For almost every unit providing a full time service, the median door to balloon times less than 90 minutes. More detailed analysis will occur next year.

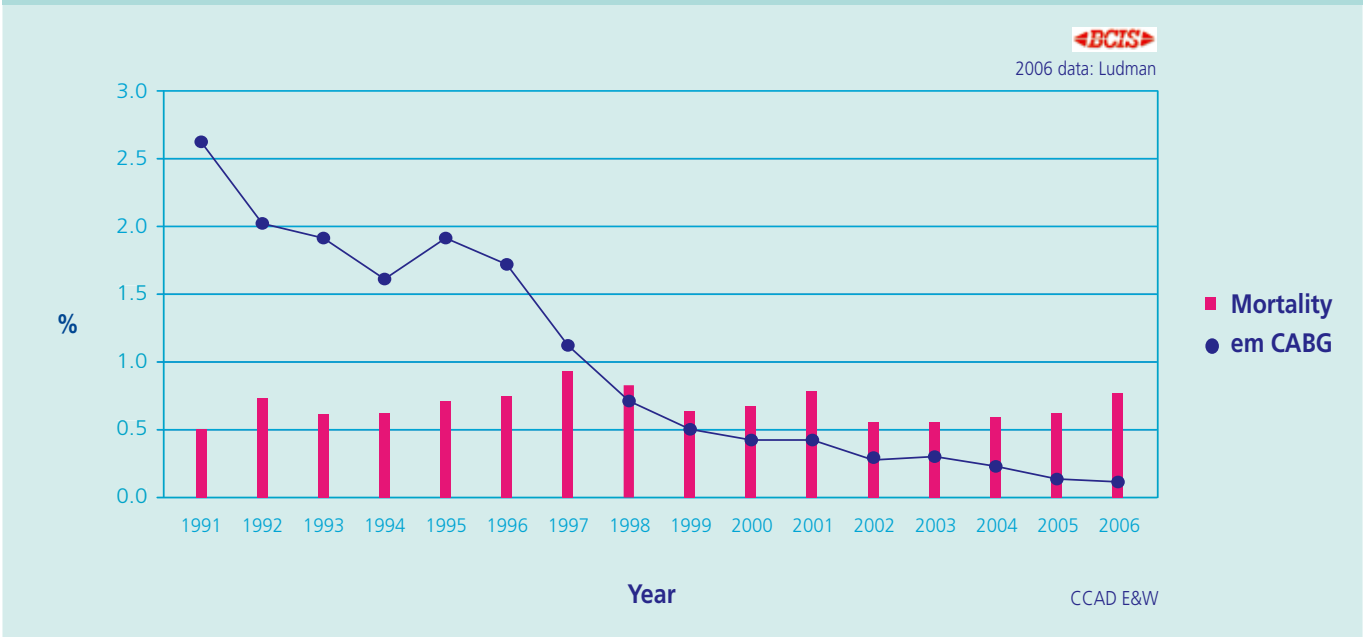
Figure 5: Door to Balloon Time



The overall rate of death before discharge from hospital following PCI has remained fairly stable over recent years at around 0.5-1 per cent, and there has been a marked fall in the need for

emergency coronary artery bypass surgery to try to solve a PCI complication (in 2006, this occurred in less than 0.1 per cent of all procedures).

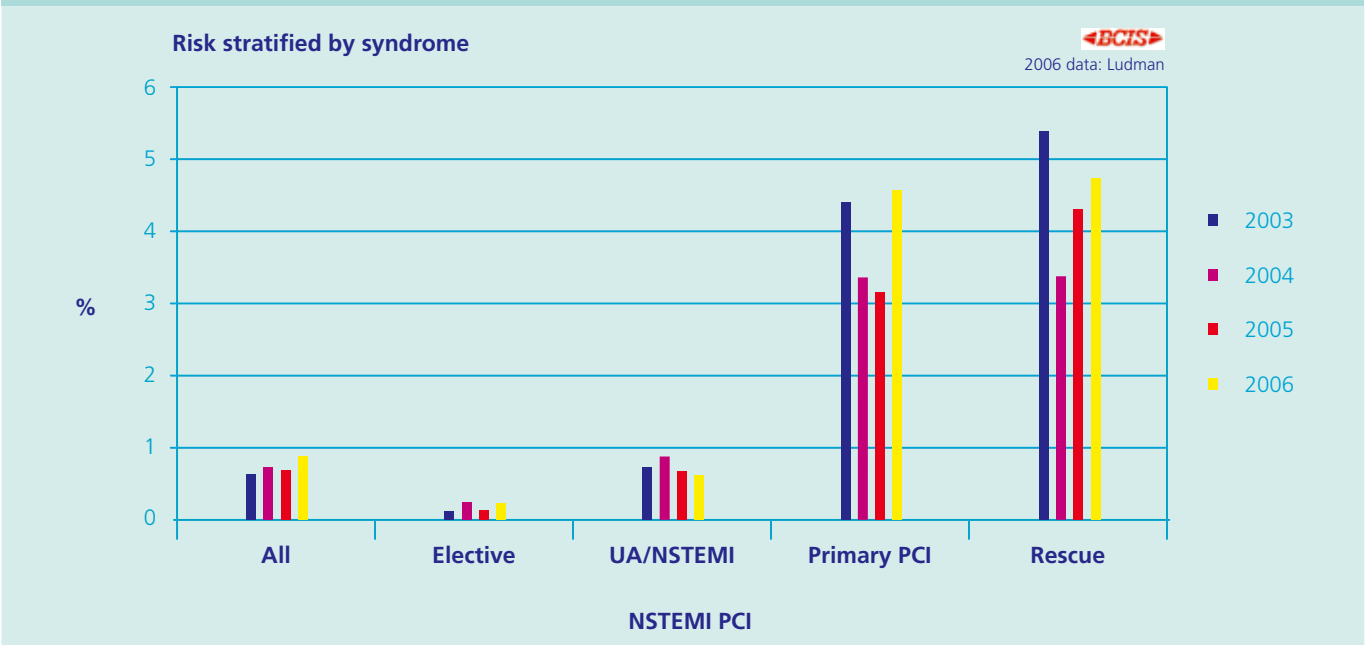
Figure 6: All Procedures: Outcomes



The risk of in-hospital death for emergency patients varies according to clinical syndrome. For patients with unstable angina or non ST elevation myocardial infarction (NSTEMI), the in hospital

mortality is less than 1 per cent. For patients with ST elevation myocardial infarction (STEMI), the mortality is higher at about 5 per cent.

Figure 7: Summary: Mortality



There has been a huge improvement in the number of centres sending data to CCAD for electronic collection and analysis. In 2006, 95.4 per cent of all NHS units in England and Wales contributed to CCAD, with only 3 English units failing to do so.

There remains a need to improve data quality, with only about one third of centres providing more than 90 per cent data completeness for key fields of the dataset.

Figure 8: Data completeness (as %) for the key data fields, for each individual PCI centre in England and Wales

	Date of Birth	Sex	MH	Pre-proc shock	Proc urgency	Vessels treated	Renal disease	DM	Dx date	Dx status	PCI hospital outcome	NHS number
SUN. Sunderland Royal Hospital	100	100	100	100	100	100	100	100	100	100	100	100
TOR. Torbay Hospital	100	100	100	99.6	100	100	100	100	100	100	100	99.2
SCM. James Cook University Hospital	100	100	99.5	100	100	100	99.6	99.9	100	100	100	100
HSC. Harley Street Clinic	100	100	99.3	100	100	100	100	99.7	100	100	100	0
HHW. Wellington Hospital	100	100	99.4	100	100	100	98.4	100	100	100	100	0
SEH. Southend Hospital	100	100	100	98.7	100	100	99.3	99.3	100	100	100	100
QEB. Queen Elizabeth Hospital, Edgbaston	100	100	100	100	100	98.8	99.9	99.9	99.5	99.5	99.5	97.5
SAN. Sandwell District General Hospital	100	99.5	100	100	100	99.5	98.8	100	98.3	100	100	99.8
DUD. City Hospital	100	99.8	100	100	100	98.6	98.6	99.1	99.5	99.5	100	98.6
EBH. Birmingham Heartlands Hospital	100	99.9	99.6	100	100	97.6	98.8	98.9	99.7	99.5	100	98.4
SPH. St Peter's Hospital	100	100	98.3	95.6	100	100	100	99.4	100	100	100	98.3
DGE. Eastbourne DGH	100	100	94.7	100	100	98	95.4	99.3	100	100	100	98.7
GEO. St George's Hospital	100	100	99.9	86.5	100	100	99.5	99.5	99.8	99.8	99.9	75.3
GRL. Glenfield Hospital	100	100	98.3	99.7	100	100	86.1	98.7	100	100	99.7	99.8
CRO. Cromwell Hospital	100	100	97.5	100	100	95	100	92.5	95	100	100	2.5
CHG. Cheltenham General Hospital	100	100	85.6	99.5	100	98.4	98.8	97.2	100	100	100	99.8
FRE. Freeman Hospital	100	100	97.3	98.8	100	97.6	98.7	95.2	100	100	91.3	99.5
WHC. Whipps Cross University Hospital	100	100	89	100	100	100	99.4	76.9	99.4	100	100	91.9

	Date of Birth	Sex	MH	Pre-proc shock	Proc urgency	Vessels treated	Renal disease	DM	Dx date	Dx status	PCI hospital outcome	NHS number
PHB. BMI Priory Hospital	96.4	98.2	100	100	100	92.2	96.4	98.2	91.1	91.1	100	7.1
LGI. Yorkshire Heart Centre	100	99.5	88.2	100	100	99.5	88	89.8	98.9	98.3	97.8	97.7
CHH. Castle Hill Hospital	100	100	94	74.6	99.5	100	96.6	96.8	99.5	99.8	98.5	94.8
DER. Derby Royal Infirmary	100	100	76.4	100	100	100	94.6	94.9	92.6	97.6	97.6	96
WAL. Walsgrave Hospital	100	100	82.6	95.4	100	99.6	90.6	95.1	99.1	90.5	99.9	93.8
QAP. Queen Alexandra Hospital	97.2	99.2	100	100	100	95.8	97.4	96.6	69.5	73.6	100	64.3
MAY. Mayday University Hospital	98.2	98.2	100	100	99.6	97.5	58.3	76.3	100	100	100	99.3
MRI. Manchester Royal Infirmary	100	100	64.7	100	100	99.4	99.1	96.8	100	100	60.6	97.7
NHB. Royal Brompton Hospital	100	100	95.7	29.9	100	99.8	96.9	98	99.9	99.9	99.9	61.8
NCR. New Cross Hospital	100	100	84.7	65.8	99.8	99.8	84.7	87.8	99.5	99.8	96.9	74.3
STH. St Thomas' Hospital	100	94	99.7	100	100	96.5	57	90.8	100	77.4	100	92.3
BRI. Bristol Royal Infirmary	100	100	69.4	94.5	100	98.7	99.1	100	99.4	100	51.5	99.2
HHH. Hemel Hempstead General Hospital	100	99.6	100	100	100	93	70.8	96.4	75.9	76.7	100	83.4
KES. King Edward Seventh Hospital	100	100	99.1	54.5	100	100	97.3	100	51.8	99.1	99.1	4.5
BOU. Royal Bournemouth Hospital	100	100	92.6	100	100	100	95.1	95	8.2	99.9	100	99.8
WRG. Worthing Hospital	100	100	99.2	100	100	100	98.4	78	56.1	58.5	100	100
RAD. John Radcliffe Hospital	100	100	100	75.6	100	95.7	49.4	71.7	100	96.6	100	98.4
UHW. University Hospital of Wales	100	100	67.3	83.5	100	99.6	74.1	75.2	94.1	95.7	98.4	97.8
CHN. Nottingham City Hospital	100	99.9	0	100	100	100	85.1	100	100	100	100	99.5

	Date of Birth	Sex	MH	Pre-proc shock	Proc urgency	Vessels treated	Renal disease	DM	Dx date	Dx status	PCI hospital outcome	NHS number
BAL. Barts and the London	100	100	75.3	92	100	97.2	79.7	90.6	55.7	100	85.8	90.7
MPH. Taunton & Somerset	100	99.3	100	100	100	99	100	99.8	38.5	35.4	100	91.4
RSC. Royal Sussex County Hospital	100	99.9	81.4	100	99.4	91	100	100	14.1	99.8	78.1	65.8
BRD. Bradford Royal Infirmary	99.6	99.6	100	100	100	99.6	96.9	96	31.4	33.6	99.6	97.8
KCH. King's College Hospital	100	98.6	81.9	99.3	99.9	97.3	91.9	99	5.6	86.4	91.1	44.8
HH. Harefield Hospital	100	99.7	56.9	35.6	100	99.6	65.9	80.3	100	100	100	54.8
PMS. The Great Western Hospital	100	100	67.5	92.1	82.9	100	90.9	100	97.4	98.7	6.6	94.8
WEX. Wexham Park Hospital	100	100	86.4	100	100	100	100	86.4	18.2	36.4	100	100
ANT. St Anthony's Hospital	100	98.8	74.5	3.3	100	99.3	59	95.7	98.1	98.1	100	17.4
BAT. Royal United Hospital Bath	100	100	80.3	100	100	100	97.5	69.5	36.5	37.9	100	1.5
RCH. Royal Cornwall Hospital	100	100	99.5	100	99.8	100	92.3	21	43.2	45.8	100	99.5
BHL. Cardiothoracic Centre Liverpool	100	100	92.7	100	100	100	100	100	0	100	3.5	97.9
UCL. University College Hospital	100	100	96.6	99.7	99.8	97.5	75.5	60.4	20.9	40.6	100	90
WYT. Wythenshawe Hospital	100	100	100	39.7	100	99.9	6	31.5	100	98.9	100	98.7
BHH. Rochdale Infirmary	100	86.1	3.6	16.3	99.8	100	74.2	85.9	99.8	99.8	100	54.1
ESU. New East Surrey Hospital	100	87.5	100	42.9	100	100	6.2	37.5	100	87.5	100	100
BHR. Royal Berkshire and Battle Hospital	100	93.5	98.2	89.6	100	89.6	76.4	65.4	17.1	28.3	100	98.4
LIS. Lister Hospital	100	97.6	58.1	32.9	99.4	98.8	88	79.6	64.1	65.3	69.6	70.7
PAP. Papworth Hospital	100	100	64.9	20.9	100	90.7	0.3	63.8	100	100	100	97.3

	Date of Birth	Sex	MH	Pre-proc shock	Proc urgency	Vessels treated	Renal disease	DM	Dx date	Dx status	PCI hospital outcome	NHS number
WHH. William Harvey Hospital	100	96.3	26.2	52.4	100	98.8	41.7	36.9	87.2	97.9	99.4	95.2
HAM. Hammersmith Hospital	99.7	99.7	100	9.5	100	100	0.4	11.9	100	96.6	100	71.3
NHH. North Hampshire Hospital	100	100	100	1.3	100	100	0.3	14.4	100	99.5	100	94.8
PLY. Derriford Hospital	100	100	47.9	25.9	99.9	98.3	1.3	47.1	100	96.5	97.1	98.2
STM. St Mary's Hospital	100	98.5	75.2	100	100	0	6.5	100	12.1	100	100	0
MOR. Morrision Hospital	100	99.9	0.3	98.4	0	98.6	1.6	87.8	99.9	99.9	94.9	99.4
VIC. Victoria Hospital	100	98.4	28.1	100	100	75.8	0.4	7.4	67.6	100	100	77.6
NGS. Northern General Hospital	100	100	18.9	17.8	99.9	99.7	40.1	47.7	67.7	68.2	8.9	98.4
NOR. Norfolk & Norwich Hospital	100	100	49.8	99.5	0	99.5	54.1	52.7	0	0	0	99
RFH. Royal Free Hospital	100	100	0	99.3	99.5	98.3	0	0	0	0	39.4	88.8
RDE. Royal Devon & Exeter Hospital	100	99.9	0	0	100	100	0.1	0.1	0.4	1.6	25.7	0

Key: DM=diabetes mellitus, Dx=Discharge, MH=medical History, Proc=procedure

The full version of this report, Angioplasty and Stents to treat Heart Disease 2007 report of the National Audit of Percutaneous Coronary Intervention in the United Kingdom contains more details and graphs of the audit findings. Please refer to the full report for a glossary of terms and references.

The complete set of data from the 2006 audit was presented at the British Cardiovascular Intervention Society's Annual Meeting (BCIS) in autumn 2007 and is available for download at the Society's website www.bcis.org.uk

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The full report *Angioplasty and Stents to treat Heart Disease 2007* will compliment this summary and is only available as a PDF download from the improving patient care section of our website.


For further information, please contact our Contact Centre, quoting document reference 28010308 for the full report or 12020108 for the executive summary. Printed copies of the summary can be ordered from The NHS Information Centre.

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 The NHS Information Centre for health and social care
1 Trevelyan Square
Boar Lane
Leeds
LS1 6AE

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