

An Overview of PCI Procedures in New Jersey: 2002-2005

Office of Health Care Quality Assessment
New Jersey Department of Health and Senior Services

July 2006

Introduction

Percutaneous Coronary Intervention (PCI) is an interventional therapeutic procedure that uses a catheter to reopen a partially or fully blocked coronary artery. The volume of PCI procedures has been growing steadily in New Jersey and currently accounts for 26% of approximately 106,846 total cardiac catheterizations performed in the State in 2005. Starting in mid 2001, the Department of Health and Senior Services (DHSS) has been monitoring the extent to which this procedure is performed. As part of the Department's interventional and diagnostic monitoring activities, some patient-level data are routinely collected from all hospitals licensed to perform cardiac catheterizations. Using data collected from these hospitals, this brief summary highlights some notable characteristics of the PCI patient population in New Jersey. This report presents data on PCI patients in 2005 with limited data used from other years for discussion purposes only. It should be noted that this data has not been audited to assure that it accurately reflects the patients' medical records.

Demographic Characteristics of PCI Patients

- Consistent with other cardiac services data, a large majority (67%) of the 28,065 PCI patients in 2005 were male.
- Consistent with the population distribution of the State, white non-Hispanics were the largest group among PCI patients, accounting for 77%, followed by Black non-Hispanics (9%), and Hispanics (7%). Asians accounted for 3% of the PCI population.
- The majority (54%) of PCI patients in 2005 were 65 years or older, with more than a quarter (26.5%) being at least 75 years old. A substantial proportion (15%) of patients was in the 45-54 age group.
- Forty-nine percent of the PCI population in 2005 were Medicare patients, with privately insured patients accounting for 43%. Medicaid accounted for less than 2% (1.8%) of PCI patients. (However, this number may be understated since hospitals may code Medicaid managed care patients as privately insured.)

Operator Volume and Complications from PCI Procedure

- Very few in-lab complications¹ associated with PCI procedures were reported by hospitals. In 2005, only 177 in-lab complications were reported among the 28,065 PCI procedures in New Jersey, a rate of 6.3 complications per 1000 procedures performed. The most common complication reported was *Arrhythmia* (57.6%) followed by *emergent open heart surgery* (19.8%) and *vascular complication* (9.6%) (Exhibit 3).

¹ Post procedure complications were not collected in the database. In-lab complications are assumed to be associated with operator skill.

- Operator volume tends to be negatively correlated with complication rates. Those who performed fewer PCI procedures (e.g. under 76 a year) tended to have higher complication rates than those who performed larger numbers of PCIs (Exhibit 4).
- The proportion of all operators who are low volume operators has continued to decline over time, concurrent with a decline in complication rate reported (Exhibits 5 and 6).

Mortality from PCI Procedure

- In 2005, the crude (i.e., not adjusted for patient risk factors) in-hospital mortality rate related to PCI was 7.8 per 1000 procedures performed. This mortality rate has remained stable since 2003 with 2002 showing a lower rate (7.3 per 1000) compared to later years (Exhibit 7). In 2003, the crude in-hospital PCI mortality rate for New York State² was 5.8 per 1000 compared to 7.8 per 1000 in New Jersey. The national in-hospital crude PCI mortality rate in 2003, estimated using the National Cardiovascular Data Registry maintained by the American College of Cardiology, was 12.4 per 1000³.
- As expected, complications played a significant role in the survival of patients. For example, in 2005, 114 patients with at least one reported complication died for every 1000 procedures performed compared to 130 per 1000 in 2004 and 141 per 1000 in 2003.
- The current data collected are not specific enough to allow adjustment for the level of risk that a patient presented prior to a procedure, so it is not possible at this time to present hospital- or operator-specific outcomes data that would permit objective comparisons among hospitals and operators. However, the Department is redesigning its cardiac catheterization registry, to begin collecting more detailed data in 2007. This will permit in following years more detailed and risk-adjusted analysis.

² New York State Department of Health, Percutaneous Coronary Interventions (PCI) in New York State, 2001-2003, May 2005.

³ American College of Cardiology, Risk Adjustment Methodology – 2003.

Exhibit 1

PCI Distribution by Gender and Race/Ethnicity, 2005

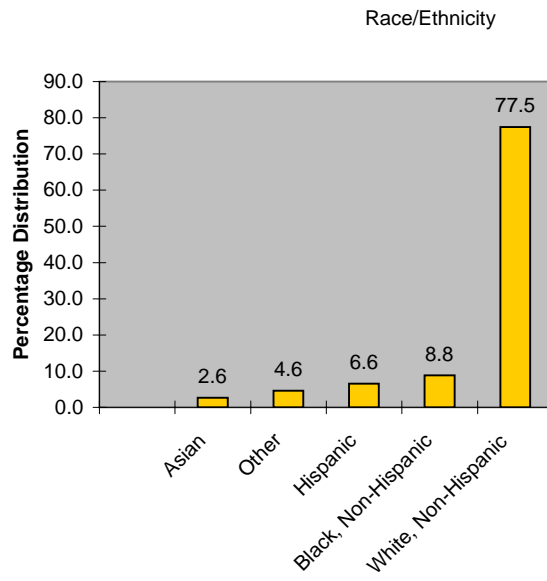


Exhibit 2

PCI Distribution by Health Insurance Status, 2005

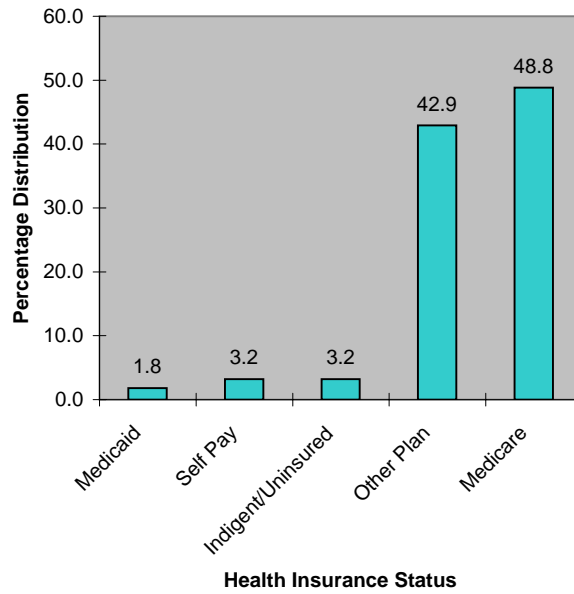


Exhibit 3 In-lab PCI-related Complications, 2005

Type of Complication	Complications	
	Number	Percent
Arrythmia	102	57.6
Emergent Open Heart Surgery	35	19.8
Vascular Complication	17	9.6
Emergent Coronary Intervention	9	5.1
New Q-Wave Myocardial infarction (MI)	6	3.4
Focal Neurological Deficit	7	4.0
Anaphylactic Reaction to Contrast Agent	1	0.6
Total*	177	100.0

Note: * The total reflects multiple complications.

Exhibit 4 PCI Complication Rates by Operator Group, 2005

Number of Cases by Primary Operator	Number of Primary Operators	Number of PCI-Related Complications of Patients			Complication Rate per 1000 [(B/C)*1000]
		None (A)	One or more (B)	Total of Cases (C = A+B)	
< 50	61	1,016	7	1,023	6.8
50-75	56	3,499	28	3,527	7.9
76-100	38	3,213	16	3,229	5.0
101-150	47	5,800	29	5,829	5.0
> 150	61	14,388	69	14,457	4.8
Total	263	27,916	149	28,065	5.3

Note: Table includes patients who died.

Exhibit 5
Distribution of PCI Primary Operators by Size Group

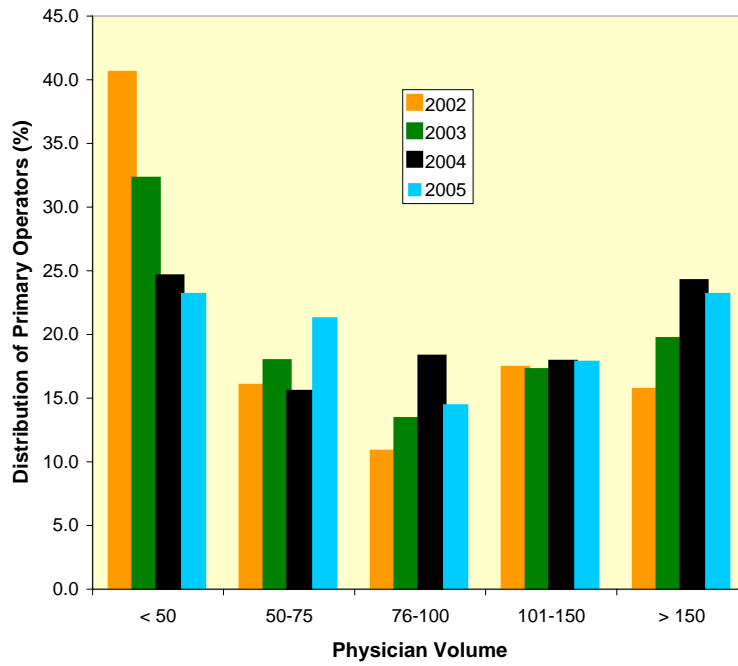


Exhibit 6
Trends in PCI Complication Rates

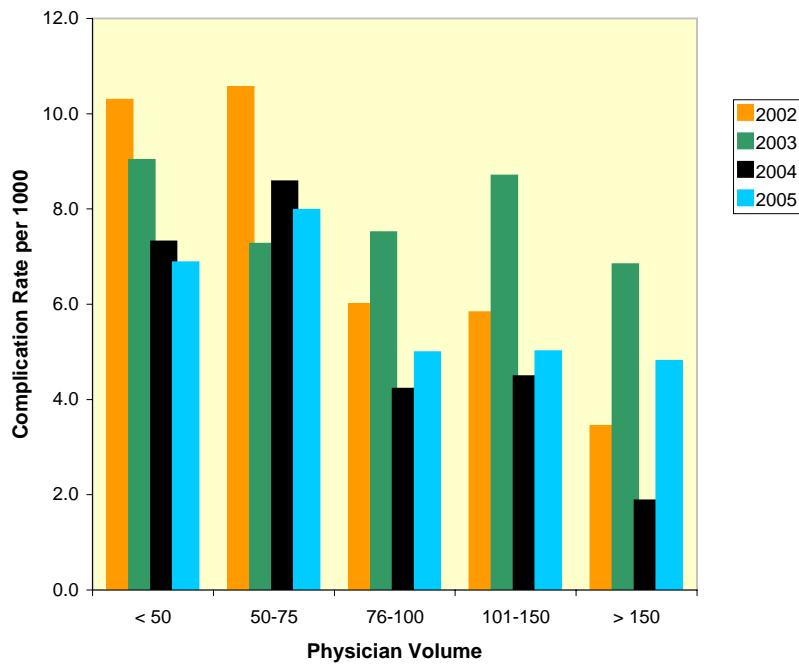


Exhibit 7 PCI Mortality by Procedure Year

