Introduction

This edition of PHC4's *Cardiac Surgery in Pennsylvania* presents results of coronary artery bypass graft (CABG) surgeries and/or valve surgeries performed in 60 of the state's general acute care hospitals during 2007 and 2008. This report displays risk-adjusted outcomes that can be used, in part, to evaluate both hospital and surgeon performance. Reported measures include risk-adjusted in-hospital and 30-day mortality ratings, 7-day and 30-day readmission ratings, and post-surgical lengths of stay. Information on average hospital charges and average Medicare payments also are reported for hospitals.

Key Findings

Readmissions

- In 2008, 2,208 patients (16.1 percent) who underwent CABG (coronary artery bypass graft) surgery and/or valve surgery were readmitted to the hospital within 30 days of discharge. Only patients readmitted for a heart-related condition or an infection or a complication were counted in the readmission analysis.
- These readmissions amounted to an additional 11,065 hospital days and over $81 million in additional hospital charges. *(Note: In almost all cases, hospitals do not receive full charges from private insurance carriers or government payers.)*
- Patients who underwent valve *with* CABG surgery had the highest rate of readmission (21.0 percent) when compared to patients who underwent valve *without* CABG surgery (17.8 percent) or CABG *without* valve surgery (14.6 percent).
- Readmitted patients who had undergone valve *with* CABG surgery were more likely to die during the readmission and were more likely to be hospitalized longer when readmitted, as compared to patients who underwent valve *without* CABG surgery or CABG *without* valve surgery.

Readmissions, 2008

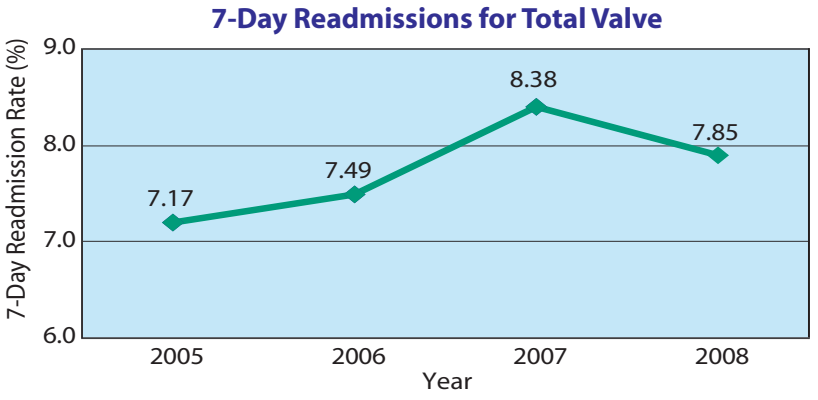
Reporting Group	Patients Readmitted within 30 Days		For patients readmitted within 30 days, the additional hospitalizations were associated with . . .				
	Number	Percent	Mortality Percent	Average Length of Stay	Total Days	Average Hospital Charge	Total Hospital Charges
Total	2,208	16.1	1.8	5.0	11,065	$36,777	$81,203,510
CABG without Valve	1,322	14.6	1.5	4.7	6,176	$35,330	$46,706,911
Valve without CABG	468	17.8	1.9	5.2	2,446	$36,723	$17,186,413
Valve with CABG	418	21.0	2.4	5.8	2,443	$41,412	$17,310,186
Total Valve	886	19.2	2.1	5.5	4,889	$38,935	$34,496,599

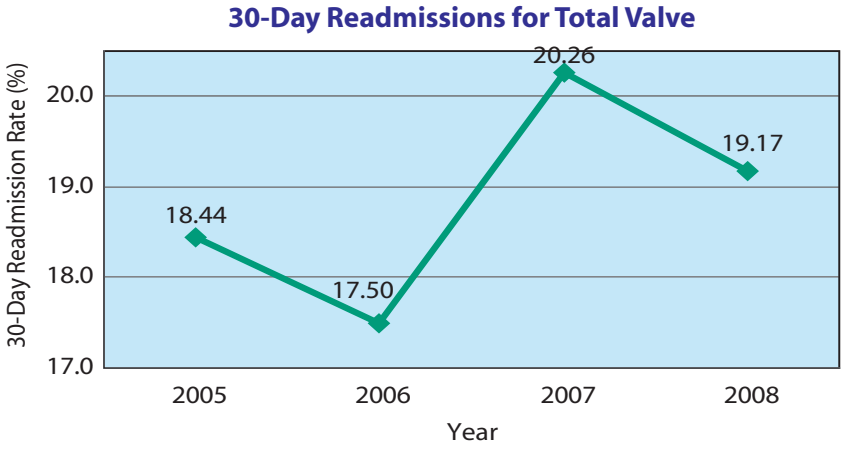
Key Findings

Readmissions – Valve Surgery

For patients undergoing valve surgery, either with or without CABG (total valve reporting group), 7-day and 30-day readmission rates decreased between 2007 and 2008.

- 7-day readmission rates for patients in the total valve reporting group increased between 2005 and 2007 and then decreased 6.3 percent, from 8.38 percent in 2007 to 7.85 percent in 2008.
- 30-day readmission rates for patients in the total valve reporting group decreased 5.4 percent between 2007 and 2008, from 20.26 to 19.17 percent, respectively.





Note: The graphs above include data for each year that PHC4 published readmission rates for valve procedures.

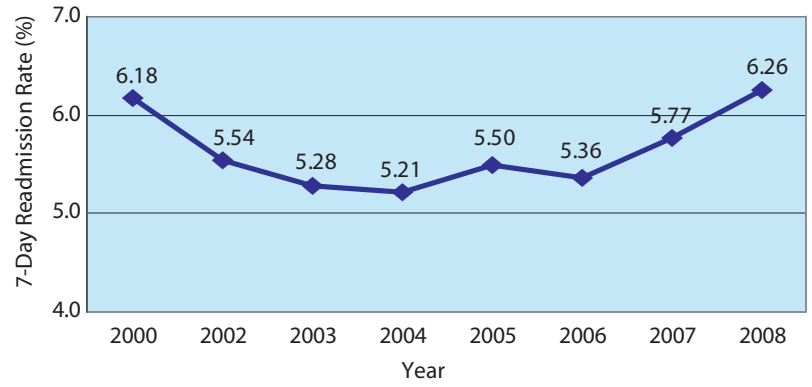
Key Findings

Readmissions – CABG Surgery

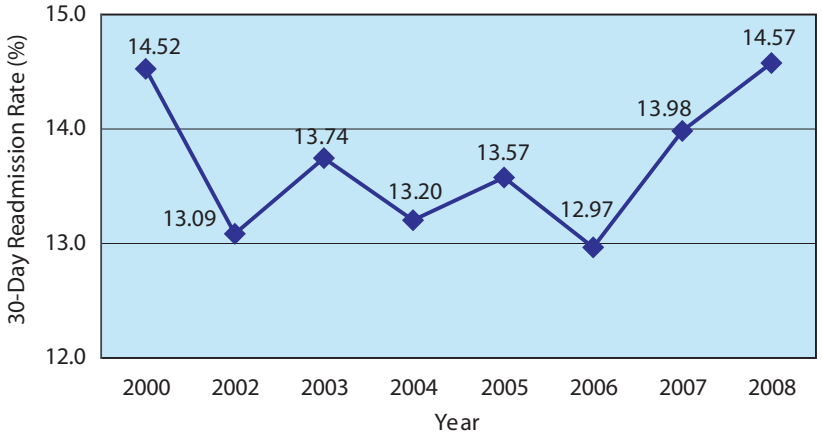
For patients undergoing CABG procedures (without a valve procedure), 7-day and 30-day readmissions increased for the past two years.

- 7-day readmissions steadily declined from 2000 to 2004 for patients undergoing CABG procedures (without a valve procedure). In recent years, the rates have increased. Between 2006 and 2008, 7-day readmissions increased 16.8 percent (from 5.36 to 6.26 percent).
- 30-day readmissions fluctuated between 2000 and 2006 and then increased 12.3 percent between 2006 and 2008 (from 12.97 to 14.57 percent).

7-Day Readmissions for CABG without Valve



30-Day Readmissions for CABG without Valve

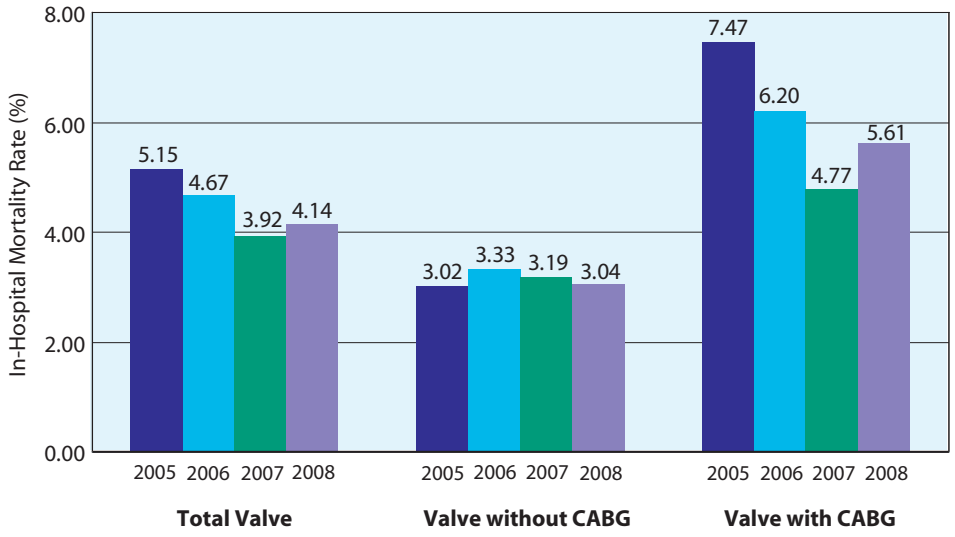


Note: The graphs above include data for each year that PHC4 published readmission rates for CABG procedures.

Key Findings

Mortality – Valve Surgery

- In 2008, in-hospital mortality rates for patients undergoing valve surgery, either with or without CABG (total valve reporting group), increased from 3.92 percent in 2007 to 4.14 percent in 2008. This increase followed two years of decreases between 2005 (when PHC4 began reporting on valve surgeries) and 2007.
  - o For patients undergoing valve surgery *without* CABG surgery, the trend for in-hospital mortality rates followed a slightly different pattern. In-hospital mortality rates increased between 2005 and 2006 and then decreased more recently. Between 2006 and 2008, in-hospital mortality rates decreased from 3.33 percent in 2006 to 3.04 percent in 2008.
  - o For patients undergoing valve surgery *with* CABG surgery, in-hospital mortality rates increased 17.6 percent between 2007 and 2008, from 4.77 to 5.61 percent, respectively. This increase followed two years of decreases in in-hospital mortality rates.

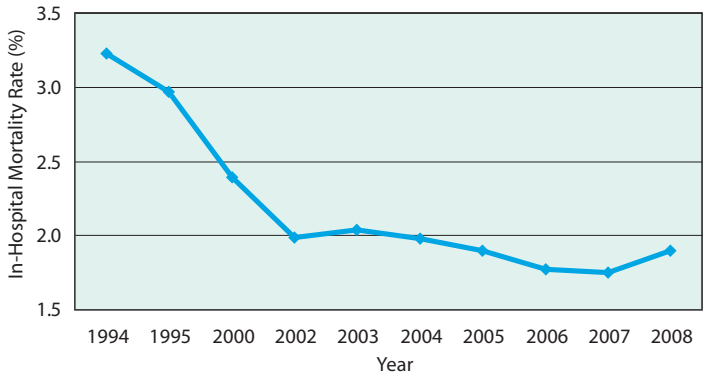


Note: This graph includes data for each year that PHC4 published analysis for valve procedures.

Key Findings

Mortality – CABG Surgery

- After declining for more than a decade, in-hospital mortality rates for patients undergoing coronary artery bypass graft (CABG) procedures (without a valve procedure) increased from 1.75 percent in 2007 to 1.90 percent in 2008. Between 1994, when the in-hospital mortality rate was 3.23 percent, and 2007, rates dropped 45.8 percent.



Note: This graph includes data, beginning with 1994, for each year that PHC4 published analysis for CABG procedures.

Medicare Payments

- The average Medicare payments for patients undergoing CABG and/or valve surgeries for 2005, 2006, and 2007 have been similar across time. However, notable differences can be seen among the amounts paid for patients undergoing CABG surgery (without a valve procedure) and patients undergoing valve surgeries *with* or *without* CABG.

Average Medicare Payment*

Reporting Group	2005	2006	2007
CABG without Valve	$29,175	$29,697	$30,448
Valve without CABG	$42,433	$41,448	$43,801
Valve with CABG	$44,119	$44,934	$46,001
Total Valve	$43,343	$43,276	$44,945

*Includes the CMS Medicare Part A hospital insurance fund payment, but not patient liabilities, such as coinsurance and deductibles.

Note: 2007 Medicare payment data is the most recent available for use in this report.