

**CORONARY
ARTERY
BYPASS
SURGERY**

**in
New York State**

1993-1995

**New York State Department of Health
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New York State Department of Health

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INTRODUCTION

The information contained in this booklet is intended for health care providers, patients and families of patients who are considering coronary artery bypass surgery. It provides data on risk factors associated with bypass surgery mortality and lists hospital and physician-specific mortality rates which have been risk-adjusted to account for differences in patient severity of illness.

New York State has taken a leadership role in setting standards for cardiac services, monitoring outcomes and sharing performance data with patients, hospitals and physicians. Hospitals and doctors involved in cardiac care have worked in cooperation with the Department of Health and the Cardiac Advisory Committee to compile accurate and meaningful data which can and has been used to enhance quality of care. We believe that this process has been instrumental in achieving the excellent outcomes that are evidenced in this report for centers across New York State.

I encourage doctors to discuss this information with their patients and colleagues as they develop treatment plans. While these statistics are an important tool in making informed health care choices, individual treatment plans must be made by doctors and patients together after careful consideration of all pertinent factors. It is important to recognize that many factors can influence the outcome of coronary artery bypass surgery. These include the patient's health before the procedure, the skill of the operating team and general after care. In addition, keep in mind that the information in this booklet does not include data from 1996 or 1997. Important changes may have taken place in some hospitals during that time period.

In developing treatment plans, I would also ask that patients and physicians alike give careful consideration to the importance of healthy lifestyles for all those affected by heart disease. While some risk factors, such as heredity, gender and age cannot be controlled, others certainly can. Controllable risk factors that contribute to a higher likelihood of developing coronary artery disease are high cholesterol levels, cigarette smoking, high blood pressure, obesity and a lack of exercise. Limiting these risk factors after bypass surgery will continue to be important in minimizing the occurrence of new blockages.

I commend the providers of this state and the Cardiac Advisory Committee for the excellent results that have been achieved through this cooperative quality improvement system. The Department of Health will continue to work in partnership with hospitals and physicians to ensure the continued high quality of cardiac surgery available to New York residents.



Barbara A. DeBuono, M.D., M.P.H., Commissioner
New York State Department of Health

CORONARY ARTERY BYPASS GRAFT SURGERY (CABG)

Heart disease is, by far, the leading cause of death in New York State, and the most common form of heart disease is atherosclerotic coronary artery disease. Different treatments are recommended for patients with coronary artery disease. For some people, changes in lifestyle, such as dietary changes, not smoking and regular exercise, can result in great improvements in health. In other cases, medication prescribed for high blood pressure or other conditions can make a significant difference.

Sometimes, however, an interventional procedure is recommended. The two common procedures performed on patients with coronary artery disease are coronary artery bypass graft (CABG) surgery and percutaneous transluminal coronary angioplasty (PTCA).

Coronary artery bypass graft surgery is a procedure in which a vein or artery from another part of the body is used to create an alternate path for blood to flow to the heart, bypassing the arterial blockage. Typically, a section of one of the large (saphenous) veins in the leg, the radial artery in the arm or the mammary artery in the

chest is used to construct the bypass. One or more bypasses may be performed during a single operation, since providing several routes for the blood supply to travel is believed to improve long-term success for the procedure. Triple and quadruple bypasses are often done for this reason, not necessarily because the patient's condition is more severe. CABG surgery is one of the most common, successful major operations currently performed in the United States.

As is true of all major surgery, risks must be considered. The patient is totally anesthetized, and there is generally a substantial recovery period in the hospital followed by several weeks recuperation at home. Even in successful cases, there is a risk of relapse causing the need for another operation.

Those who have CABG surgery are not cured of coronary artery disease; the disease can still occur in the grafted blood vessels or other coronary arteries. In order to minimize new blockage, patients should continue to reduce their risk factors for heart disease.

THE HEALTH DEPARTMENT PROGRAM

The New York State Department of Health has been studying the effects of patient and treatment characteristics (called risk factors) on outcomes for patients with heart disease. Detailed statistical analyses of the information received from the study have been conducted under the guidance of the New York State Cardiac Advisory Committee, a group of independent practicing cardiac surgeons, cardiologists and other professionals in related fields.

The results have been used to create a cardiac profile system which assesses the performance of hospitals and surgeons over time, independent of the severity of individual patients' preoperative conditions.

Designed to improve health in people with heart disease, this program is aimed at:

- understanding the health risks of patients which adversely affect how they will fare in coronary artery bypass surgery;
- improving the results of different treatments of heart disease;
- improving cardiac care;
- providing information to help patients make better decisions about their own care.

PATIENT POPULATION

All patients undergoing isolated coronary artery bypass graft surgery (CABG surgery with no other major heart surgery during the same admission) in New York State hospitals, who were discharged in 1995 are included in the one-year results for coronary artery bypass surgery. Similarly, all patients undergoing isolated CABG surgery who were discharged between January 1,

1993, and December 31, 1995, are included in the three-year results.

Isolated CABG surgery represented 74.19 percent of all adult cardiac surgery for the three-year period covered by this report. Total cardiac surgery volume and isolated CABG volume are tabulated in Table 5 by hospital and surgeon for the period 1993 through 1995.

RISK ADJUSTMENT FOR ASSESSING PROVIDER PERFORMANCE

Provider performance is directly related to patient outcomes. Whether patients recover quickly, experience complications or die following a procedure is in part a result of the kind of medical care they receive. It is difficult, however, to compare outcomes across hospitals when assessing provider performance, because different hospitals treat different types of patients. Hospitals with sicker patients may have higher rates of complications and death than other hospitals in the state. The following describes how the New York State Department of Health adjusts for patient risk in assessing provider outcomes.

Data Collection and Review

As part of the risk-adjustment process, New York State hospitals where CABG surgery is performed provide information to the Department of Health for each patient undergoing that procedure. Cardiac surgery departments in hospitals collect data concerning patients' demographic and clinical characteristics. Approximately 40 of these characteristics (called risk factors) are collected

for each patient. Along with information about the hospital, physician and the patient's status at discharge, these data are entered into a computer, and sent to the Department of Health for analysis.

Data are verified through review of unusual reporting frequencies, cross-match of cardiac surgery data with other Department of Health databases and a review of medical records for a selected sample of cases.

Assessing Patient Risk

Each person who develops coronary artery disease has a unique health history. A cardiac profile system has been developed to evaluate the risk of treatment for each individual patient based on his or her history, weighing the important health facts for that person based on the experiences of thousands of patients who have undergone the same procedures in recent years. All important risk factors for each patient are combined to create a risk profile.

An 80-year-old patient with a history of two heart attacks, for example, has a very different risk

profile from a 40-year-old with no previous heart problems.

The statistical analyses conducted by the Department of Health consist of determining which of the risk factors collected are significantly related to in-hospital death for CABG surgery, and determining how to weight the significant risk factors to predict the chance each patient will have of dying in the hospital, given his/her specific characteristics.

Doctors and patients should review individual risk profiles together. Treatment decisions must be made by doctors and patients together after careful consideration of all the information.

Predicting Patient Mortality Rates for Providers

The statistical methods used to predict mortality on the basis of the significant risk factors are tested to determine if they are sufficiently accurate in predicting mortality for patients who are extremely ill prior to undergoing the procedure as well as for patients who are relatively healthy. These tests have confirmed that the models are reasonably accurate in predicting how patients of all different risk levels will fare when undergoing coronary bypass surgery.

The mortality rate for each hospital and surgeon is also predicted using the statistical model. This is accomplished by summing the predicted probabilities of death for each of the provider's patients and dividing by the number of patients. The resulting rate is an estimate of what the provider's mortality rate would have been if the provider's performance were identical to the state performance. The percentage is called the **predicted or expected mortality rate**.

Computing the Risk-Adjusted Rate

The **risk-adjusted mortality rate** represents the best estimate, based on the associated statistical model, of what the provider's mortality rate would have been if the provider had a mix of patients identical to the statewide mix. Thus, the risk-adjusted mortality rate has, to the extent possible, ironed out differences among providers in patient severity of illness, since it arrives at a mortality rate for each provider for an identical group of patients.

To get the risk-adjusted mortality rate, the observed mortality rate is first divided by the provider's expected mortality rate. If the resulting ratio is larger than one, the provider has a higher mortality rate than expected on the basis of its patient mix; if it is smaller than one, the provider

has a lower mortality rate than expected from its patient mix. The ratio is then multiplied by the overall statewide mortality rate (2.52% in 1995) to obtain the provider's risk-adjusted rate.

Interpreting the Risk-Adjusted Mortality Rate

If the risk-adjusted mortality rate is lower than the statewide mortality rate, the provider has a better performance than the state as a whole; if the risk-adjusted mortality rate is higher than the statewide mortality rate, the provider has a worse performance than the state as a whole.

The risk-adjusted mortality rate is used in this report as a measure of quality of care provided by hospitals and surgeons. However, there are reasons that a provider's risk-adjusted mortality rate may not be indicative of its true quality.

For example, extreme outcome rates may occur due to chance alone. This is particularly true for low-volume providers, for whom very high or very low mortality rates are more likely to occur than for high-volume providers. In order to minimize misinterpretation due to chance variation, physician-specific coronary bypass data have been reported only for surgeons who have performed at least 200 operations over a three-year period. Another attempt to prevent misinterpretation of differences caused by chance variation is the use of expected ranges (confidence intervals) in the reported results. The interpretations of those terms are provided later when the data are presented.

Differences in hospital coding of risk factors could be an additional reason that a provider's risk-adjusted rate may not be reflective of quality of care. The Department of Health monitors the quality of coded data by reviewing patients' medical records to ascertain the presence of key risk factors. When significant coding problems have been discovered, hospitals have been required to recode these data and have been subjected to subsequent monitoring.

A final reason that risk-adjusted rates may be misleading is that overall preprocedural severity of illness may not be accurately estimated because important risk factors are missing. This is not considered to be an important factor, however, because the New York State data system contains virtually every risk factor that has ever been demonstrated to be related to patient mortality in national and international studies.

Although there are reasons that risk-adjusted mortality rates presented here may not be a perfect reflection of quality of care, the

Department of Health feels that this information is a valuable aid in choosing providers for CABG surgery.

How This Contributes to Quality Improvement

The goal of the Department of Health and the Cardiac Advisory Committee is to improve the quality of care in relation to CABG surgery in New York State. Providing the hospitals and cardiac surgeons in New York State with data about their own outcomes for these procedures allows them to examine the quality of their own care, and to identify areas that need improvement.

The data collected and analyzed in this program are given to the Cardiac Advisory Committee. Committee members assist with interpretation and

advise the Department of Health regarding which hospitals and surgeons may need special attention. Committee members have also conducted site visits to particular hospitals, and have recommended that some hospitals obtain the expertise of outside consultants to design improvements for their programs.

The overall results of this program of ongoing review in CABG surgery show that significant progress is being made. In response to the program's results for CABG surgery, facilities have refined patient criteria, evaluated patients more closely for preoperative risks and directed them to the appropriate surgeon. More importantly, many hospitals have identified medical care process problems that have led to less than optimal outcomes, and have altered those processes to achieve improved results.

RESULTS

1995 Risk Factors for CABG Surgery

The significant preoperative risk factors for coronary artery bypass surgery in 1995 are presented in Table 1.

Roughly speaking, the odds ratio for a risk factor represents the number of times more likely a patient with that risk factor is of dying in the hospital during or after CABG surgery than a patient without the risk factor, all other risk factors being the same. For example, the odds ratio for the risk factor "renal failure" is 2.891. This means that a patient who has renal failure is approximately 2.891 times as likely to die in the hospital as a patient who does not have renal failure but who has the same other significant risk factors.

For most of the risk factors in the table, there are only two possibilities: having the risk factor or not having it (for example, a patient either has renal failure or does not have it). Exceptions are age and congestive heart failure. For age, the

odds ratio roughly represents the number of times more likely a patient is to die in the hospital than a patient one year younger. Thus, a patient undergoing CABG surgery who is 72 years old has a chance of dying in the hospital that is approximately 1.052 times the chance that a patient 71 years old undergoing CABG has of dying in the hospital.

There are two risk factors involving congestive heart failure (CHF): congestive heart failure this admission and congestive heart failure previous to this admission. These are mutually exclusive risk factors in that a patient is classified as "congestive heart failure, previous to this admission" only if he or she has had CHF previously but did not have CHF during the admission for cardiac surgery. For each of these two risk factors the odds are relative to a patient without congestive heart failure before or during the admission for CABG surgery.

Table 1: Multivariable Risk Factor Equation for CABG Hospital Deaths in New York State in 1995.

Patient Risk Factor	Logistic Regression		
	Coefficient	P-Value	Odds Ratio
Demographic			
Age	0.0511	<0.0001	1.052
Female Gender	0.3548	0.0005	1.426
Hemodynamic State			
Unstable	1.2128	<0.0001	3.363
Shock	2.0533	<0.0001	7.794
Severity of Atherosclerotic Process			
Carotid Disease	0.4685	<0.0001	1.598
Aortoiliac Disease	0.7428	<0.0001	2.102
Extensively Calcified Ascending Aorta	0.4816	0.0008	1.619
Ventricular Function			
Prev. MI < 6 Hrs.	0.6174	0.0174	1.854
Malignant Ventricular Arrhythmia	0.8056	<0.0001	2.238
Congestive Heart Failure, This Admission	0.9587	<0.0001	2.608
Congestive Heart Failure, Previously	0.8088	<0.0001	2.245
Comorbidity			
Renal Failure	1.0615	<0.0001	2.891
Previous Open Heart Operations	1.2167	<0.0001	3.376
Intercept = -8.1658			
C-Statistic = .807			
MI = myocardial infarction			

1995 HOSPITAL OUTCOMES FOR CABG SURGERY

Table 2 and Figure 1 present the 1995 CABG surgery results for the 31 hospitals performing this operation in New York. The table contains, for each hospital, the number of isolated CABG operations (CABG operations with no other major heart surgery) resulting in 1995 discharges, the number of in-hospital deaths, the observed mortality rate, the expected mortality rate based on the statistical model presented in Table 1, the risk-adjusted mortality rate, a 95 percent confidence interval for the risk-adjusted rate and upper and lower P-values for the risk-adjusted mortality rate.

Definitions of key terms are as follows:

The **observed mortality rate (OMR)** is the number of observed deaths divided by the number of patients.

The **expected mortality rate (EMR)** is the sum of the predicted probabilities of death for all patients divided by the total number of patients.

The **risk-adjusted mortality rate (RAMR)** is the best estimate, based on the statistical model, of what the provider's mortality rate would have been if the provider had a mix of patients identical to the statewide mix.

Confidence intervals for the risk-adjusted mortality rate indicate which hospitals had significantly more or fewer deaths than expected given the risk factors of their patients. Hospitals with significantly higher rates than expected after adjusting for risk are those with confidence intervals entirely above the statewide rate. Hospitals with significantly lower rates than expected given the severity of illness of their patients before surgery have confidence intervals entirely below the statewide rate.

As indicated in Table 2, the overall mortality rate for the 19,283 CABG operations performed at the 31 hospitals was 2.52 percent. Observed mortality rates ranged from 1.03 percent to 4.85 percent. The range in expected mortality rates, which measure patient severity of illness, was from 1.68 percent to 3.00 percent.

The risk-adjusted mortality rates, which are used to measure performance, ranged from 1.16 percent to 5.67 percent. One hospital, St. Joseph's, had a risk-adjusted mortality rate that was significantly lower than the statewide rate. Two hospitals, Upstate Medical Center and Millard Fillmore, had significantly higher risk-adjusted rates than the statewide average.

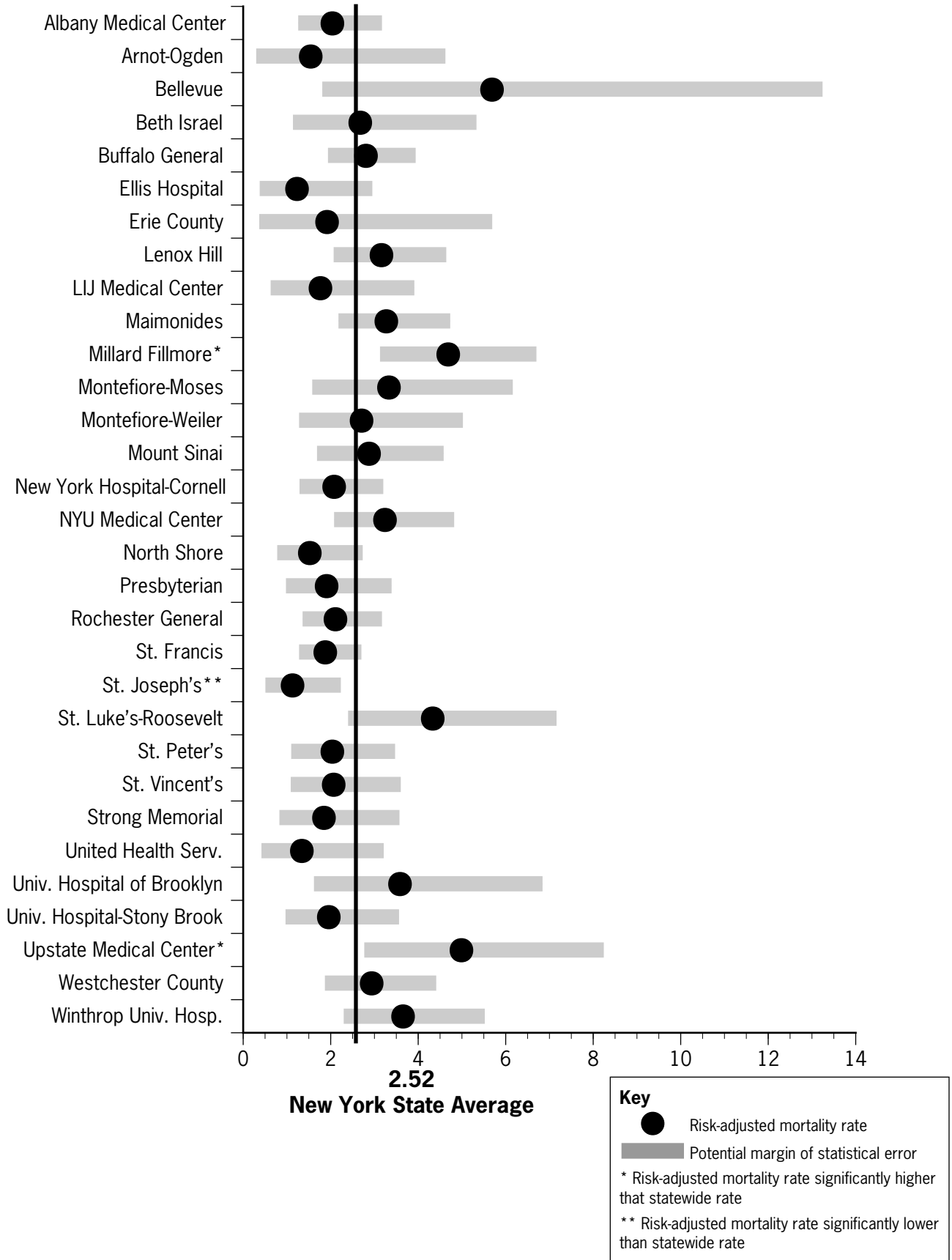
Table 2: Hospital Observed, Expected and Risk-Adjusted Mortality Rates (RAMR) for CABG Surgery in New York State, 1995 Discharges (Listed Alphabetically by Hospital)

Hospital	Cases	Deaths	OMR	EMR	RAMR	95% CI for RAMR
Albany Medical Center	1163	21	1.81	2.20	2.06	(1.28, 3.15)
Arnot-Ogden	199	3	1.51	2.41	1.57	(0.32, 4.60)
Bellevue	103	5	4.85	2.16	5.67	(1.83, 13.22)
Beth Israel	355	8	2.25	2.10	2.69	(1.16, 5.31)
Buffalo General	1231	35	2.84	2.54	2.82	(1.96, 3.92)
Ellis Hospital	487	5	1.03	2.06	1.26	(0.40, 2.93)
Erie County	196	3	1.53	1.98	1.94	(0.39, 5.67)
Lenox Hill	714	27	3.78	3.00	3.17	(2.09, 4.62)
LIJ Medical Center	388	6	1.55	2.18	1.79	(0.65, 3.89)
Maimonides	850	29	3.41	2.62	3.28	(2.20, 4.71)
Millard Fillmore	708	30	4.24	2.28	4.68 *	(3.15, 6.68)
Montefiore-Moses	387	10	2.58	1.95	3.34	(1.60, 6.14)
Montefiore-Weiler	309	10	3.24	3.00	2.72	(1.30, 5.00)
Mount Sinai	537	18	3.35	2.92	2.89	(1.71, 4.56)
New York Hospital-Cornell	930	22	2.37	2.84	2.10	(1.31, 3.18)
NYU Medical Center	645	25	3.88	3.00	3.25	(2.10, 4.80)
North Shore	651	12	1.84	2.99	1.55	(0.80, 2.71)
Presbyterian	635	12	1.89	2.46	1.93	(1.00, 3.37)
Rochester General	1053	25	2.37	2.80	2.13	(1.38, 3.15)
St. Francis	1761	32	1.82	2.41	1.90	(1.30, 2.68)
St. Joseph's	799	9	1.13	2.44	1.16 **	(0.53, 2.21)
St. Luke's-Roosevelt	469	15	3.20	1.86	4.33	(2.42, 7.14)
St. Peter's	682	14	2.05	2.51	2.06	(1.12, 3.45)
St. Vincent's	554	13	2.35	2.82	2.09	(1.11, 3.58)
Strong Memorial	453	9	1.99	2.67	1.87	(0.85, 3.55)
United Health Serv.	373	5	1.34	2.47	1.37	(0.44, 3.19)
Univ. Hospital of Brooklyn	269	9	3.35	2.34	3.59	(1.64, 6.82)
Univ. Hospital-Stony Brook	516	11	2.13	2.71	1.98	(0.99, 3.54)
Upstate Medical Center	450	15	3.33	1.68	4.98 *	(2.79, 8.22)
Westchester County	818	24	2.93	2.50	2.95	(1.89, 4.39)
Winthrop Univ. Hosp.	598	23	3.85	2.64	3.66	(2.32, 5.50)
Total	19283	485	2.52	2.52	2.52	

* Risk-adjusted mortality rate significantly higher than statewide rate based on 95 percent confidence interval.

** Risk-adjusted mortality rate significantly lower than statewide rate based on 95 percent confidence interval.

Figure 1: Risk-Adjusted Mortality Rates for Coronary Artery Bypass Grafts in New York State, 1995 Discharges (Listed Alphabetically by Hospital)



1993-1995 HOSPITAL AND SURGEON DATA FOR CABG SURGERY

Table 3 provides the number of isolated CABG operations, number of CABG patients who died in the hospital, observed mortality rate, expected mortality rate, risk-adjusted mortality rate, and the 95 percent confidence interval for the risk-adjusted mortality rate for 1993-95 for each of the 31 hospitals performing CABG surgery during the time period. This hospital information is presented for each surgeon who performed 200 or more isolated CABG operations in that hospital during 1993-1995. The results for surgeons who performed fewer than 200 isolated CABG operations are grouped together and reported as "other cases" in the hospital in which the operations were performed. Surgeons who performed operations in more than one hospital are noted in the table and are listed in all hospitals in which they performed 200 or more operations.

Also, surgeons who have performed a total of 200 or more isolated CABG operations between 1993 and 1995 and performed CABG surgery in two or more New York State hospitals are listed separately in Table 4. For these surgeons, the table presents the number of isolated CABG operations, the number of deaths, observed mortality rate, expected mortality rate and risk-adjusted mortality rate with its 95 percent confidence interval for each hospital in which the surgeon performed surgery, as well as the aggregate numbers (across all hospitals in which the surgeon performed operations). In addition, surgeons and hospitals with risk-adjusted mortality rates that are significantly lower or higher than the statewide mortality rate (as judged by a 95% confidence interval) are noted in Tables 3 and 4.

Table 3: Observed, Expected and Risk-Adjusted Hospital and Surgeon In-Hospital Mortality Rates for CABG Surgery, 1993-1995

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Albany Medical Center Hospital						
#Banker M	252	4	1.59	1.40	2.90	(0.78, 7.43)
##Bennett E	281	1	0.36	2.37	0.39 **	(0.01, 2.15)
#Britton L	462	7	1.52	1.95	2.00	(0.80, 4.12)
#Canavan T	588	4	0.68	1.87	0.93 **	(0.25, 2.39)
Ferraris V	279	11	3.94	2.82	3.59	(1.79, 6.42)
Foster E	248	5	2.02	2.57	2.02	(0.65, 4.71)
Kelley J	221	4	1.81	2.16	2.15	(0.58, 5.52)
Luber J	453	15	3.31	2.39	3.55	(1.99, 5.86)
##Miller S	290	3	1.03	2.36	1.13	(0.23, 3.29)
All Others	202	8	3.96	2.27	4.48	(1.93, 8.82)
TOTAL	3276	62	1.89	2.18	2.23	(1.71, 2.86)
Arnot-Ogden Memorial Hospital						
Borja A	261	6	2.30	2.56	2.30	(0.84, 5.01)
Quintos E	230	5	2.17	2.65	2.11	(0.68, 4.92)
Vaughan J	213	3	1.41	2.60	1.39	(0.28, 4.06)
All Others	54	0	0.00	1.90	0.00	(0.00, 9.19)
TOTAL	758	14	1.85	2.55	1.86	(1.01, 3.12)

Table 3 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Bellevue Hospital Center						
TOTAL	270	13	4.81	2.20	5.63 *	(3.00, 9.63)
Beth Israel Medical Center						
Tranbaugh R	684	15	2.19	2.88	1.96	(1.09, 3.23)
All Others	175	2	1.14	1.70	1.73	(0.19, 6.23)
TOTAL	859	17	1.98	2.64	1.93	(1.12, 3.08)
Buffalo General Hospital						
Bergsland J	530	10	1.89	2.50	1.94	(0.93, 3.56)
Bhayana J	393	11	2.80	2.15	3.35	(1.67, 5.99)
Grosner G	681	12	1.76	2.35	1.92	(0.99, 3.36)
Lajos T	524	23	4.39	2.41	4.67 *	(2.96, 7.00)
Levinsky L	226	5	2.21	2.53	2.24	(0.72, 5.23)
Lewin A	656	20	3.05	1.99	3.94	(2.41, 6.09)
Raza S	486	18	3.70	2.29	4.16	(2.46, 6.57)
All Others	99	7	7.07	2.68	6.78 *	(2.71, 13.96)
TOTAL	3595	106	2.95	2.31	3.28 *	(2.69, 3.97)
Ellis Hospital						
Depan H	456	11	2.41	2.27	2.73	(1.36, 4.89)
#McIlduff J	246	1	0.41	2.05	0.51	(0.01, 2.83)
##Saifi J	346	6	1.73	1.58	2.82	(1.03, 6.14)
All Others	240	6	2.50	1.88	3.42	(1.25, 7.44)
TOTAL	1288	24	1.86	1.97	2.43	(1.56, 3.61)
Erie County Medical Center						
#Bell-Thomson J	540	8	1.48	1.51	2.53	(1.09, 4.98)
All Others	2	0	0.00	3.22	0.00	(0.00,146.4)
TOTAL	542	8	1.48	1.51	2.51	(1.08, 4.94)
Lenox Hill Hospital						
Stelzer P	473	11	2.33	2.25	2.66	(1.32, 4.75)
Subramanian V	1302	50	3.84	2.80	3.52 *	(2.61, 4.64)
All Others	252	9	3.57	1.72	5.34	(2.43,10.13)
TOTAL	2027	70	3.45	2.54	3.49 *	(2.72, 4.41)
Long Island Jewish Medical Center						
Graver L	576	13	2.26	2.21	2.62	(1.40, 4.49)
Palazzo R	414	5	1.21	2.44	1.27	(0.41, 2.96)
All Others	160	4	2.50	2.40	2.68	(0.72, 6.85)
TOTAL	1150	22	1.91	2.32	2.12	(1.33, 3.21)

Table 3 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Maimonides Medical Center						
#Acinapura A	234	5	2.14	2.41	2.28	(0.74, 5.32)
#Cunningham J N	371	14	3.77	2.71	3.57	(1.95, 5.99)
Jacobowitz I	1318	40	3.03	3.15	2.47	(1.77, 3.37)
Sabado M	415	19	4.58	3.59	3.28	(1.97, 5.12)
All Others	134	6	4.48	2.14	5.37	(1.96, 11.68)
TOTAL	2472	84	3.40	3.03	2.88	(2.29, 3.56)
Millard Fillmore Hospital						
Aldridge J	550	17	3.09	2.26	3.51	(2.04, 5.62)
Guarino R	477	14	2.94	1.68	4.49	(2.45, 7.53)
#Jennings L	498	18	3.61	2.21	4.19	(2.48, 6.63)
Major W	243	1	0.41	2.01	0.53	(0.01, 2.93)
All Others	190	12	6.32	2.27	7.13 *	(3.68, 12.45)
TOTAL	1958	62	3.17	2.08	3.91 *	(3.00, 5.02)
Montefiore Medical Center - Moses Division						
Attai L	451	15	3.33	2.03	4.21	(2.36, 6.95)
Brodman R	313	6	1.92	1.66	2.96	(1.08, 6.45)
Merav A	280	5	1.79	2.02	2.27	(0.73, 5.29)
All Others	140	6	4.29	1.47	7.47 *	(2.73, 16.26)
TOTAL	1184	32	2.70	1.86	3.72	(2.55, 5.25)
Montefiore Medical Center - Weiler Division						
#Frymus M	378	12	3.17	2.60	3.14	(1.62, 5.48)
Sisto D	315	10	3.17	3.75	2.18	(1.04, 4.00)
All Others	136	6	4.41	2.00	5.66	(2.07, 12.33)
TOTAL	829	28	3.38	2.94	2.95	(1.96, 4.27)
Mount Sinai Hospital						
Ergin M	553	9	1.63	2.61	1.60	(0.73, 3.04)
Galla J	241	15	6.22	3.95	4.05	(2.26, 6.68)
Lansman S	407	18	4.42	3.44	3.30	(1.96, 5.22)
All Others	252	7	2.78	2.23	3.19	(1.28, 6.58)
TOTAL	1453	49	3.37	3.00	2.89	(2.14, 3.82)
New York Hospital - Cornell						
Gold J	223	3	1.35	2.84	1.22	(0.24, 3.55)
Isom O	272	5	1.84	2.21	2.13	(0.69, 4.98)
Krieger K	807	18	2.23	2.76	2.08	(1.23, 3.28)
Lang S	852	23	2.70	3.32	2.08	(1.32, 3.13)
Rosengart T	512	14	2.73	3.50	2.01	(1.10, 3.37)
All Others	181	6	3.31	2.79	3.05	(1.11, 6.64)
TOTAL	2847	69	2.42	3.02	2.06	(1.60, 2.61)

Table 3 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
New York University Medical Center						
#Colvin S	276	14	5.07	3.96	3.29	(1.80, 5.51)
#Culliford A	380	6	1.58	3.16	1.28	(0.47, 2.80)
Esposito R	287	6	2.09	3.39	1.58	(0.58, 3.45)
#Galloway A	249	8	3.21	3.01	2.74	(1.18, 5.40)
Spencer F	204	10	4.90	2.58	4.88	(2.34, 8.97)
All Others	479	22	4.59	4.18	2.82	(1.77, 4.27)
TOTAL	1875	66	3.52	3.49	2.59	(2.00, 3.29)
North Shore University Hospital						
Hall M	672	11	1.64	2.39	1.76	(0.88, 3.14)
Nelson R	209	3	1.44	2.28	1.61	(0.32, 4.72)
Pogo G	475	8	1.68	2.10	2.06	(0.89, 4.05)
Tortolani A	402	7	1.74	1.82	2.46	(0.99, 5.07)
All Others	33	0	0.00	1.39	0.00	(0.00, 20.51)
TOTAL	1791	29	1.62	2.15	1.93	(1.29, 2.77)
Presbyterian Hospital-City of New York						
Michler R	227	10	4.41	2.83	3.99	(1.91, 7.34)
Oz M	258	7	2.71	2.97	2.35	(0.94, 4.84)
Rose E	475	9	1.89	1.77	2.75	(1.25, 5.22)
Smith C	641	15	2.34	3.13	1.92	(1.07, 3.16)
All Others	194	8	4.12	1.92	5.51	(2.37, 10.86)
TOTAL	1795	49	2.73	2.58	2.72	(2.01, 3.59)
Rochester General Hospital						
Cheeran D	846	27	3.19	2.39	3.43	(2.26, 4.99)
Kirshner R	900	28	3.11	3.37	2.37	(1.58, 3.43)
Knight P	980	31	3.16	2.54	3.19	(2.17, 4.53)
All Others	265	11	4.15	4.62	2.31	(1.15, 4.13)
TOTAL	2991	97	3.24	2.93	2.84	(2.30, 3.47)
St. Francis Hospital						
Bercow N	534	11	2.06	2.38	2.22	(1.11, 3.97)
Damus P	627	7	1.12	2.02	1.42	(0.57, 2.93)
Durban L	476	4	0.84	3.38	0.64 **	(0.17, 1.64)
Lamendola C	323	3	0.93	2.59	0.92	(0.19, 2.69)
Robinson N	928	14	1.51	2.13	1.82	(0.99, 3.05)
Taylor J	975	14	1.44	2.56	1.44 **	(0.79, 2.41)
Weisz D	634	18	2.84	2.54	2.87	(1.70, 4.54)
All Others	275	6	2.18	2.20	2.55	(0.93, 5.55)
TOTAL	4772	77	1.61	2.45	1.69 **	(1.34, 2.12)

Table 3 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
St. Joseph's Hospital Health Center						
Marvasti M	493	1	0.20	1.76	0.30 **	(0.00, 1.64)
Nast E	476	9	1.89	2.59	1.88	(0.86, 3.56)
Nazem A	620	7	1.13	2.92	0.99 **	(0.40, 2.05)
Rosenberg J	569	6	1.05	2.04	1.33	(0.49, 2.89)
TOTAL	2158	23	1.07	2.35	1.17 **	(0.74, 1.75)
St. Luke's Roosevelt Hospital-St. Luke's Div.						
Anagnostopoulos C	212	11	5.19	2.60	5.13	(2.56, 9.18)
Aronis M	417	9	2.16	1.70	3.25	(1.48, 6.17)
Mindich B	324	4	1.23	1.88	1.68	(0.45, 4.31)
Swistel D	382	9	2.36	3.32	1.82	(0.83, 3.46)
All Others	65	4	6.15	2.28	6.92	(1.86, 17.72)
TOTAL	1400	37	2.64	2.35	2.89	(2.03, 3.98)
St. Peter's Hospital						
##Bennett E	415	7	1.69	2.19	1.97	(0.79, 4.07)
##Dal Col R	536	4	0.75	2.43	0.79 **	(0.21, 2.02)
All Others	819	24	2.93	3.23	2.33	(1.49, 3.47)
TOTAL	1770	35	1.98	2.75	1.85	(1.29, 2.57)
St. Vincent's Hospital and Medical Center						
Galdieri R	493	19	3.85	3.33	2.97	(1.79, 4.64)
McGinn J	532	12	2.26	4.24	1.37 **	(0.71, 2.39)
Tyras D	556	13	2.34	2.24	2.68	(1.43, 4.58)
All Others	77	2	2.60	1.23	5.44	(0.61, 19.65)
TOTAL	1658	46	2.77	3.16	2.26	(1.65, 3.01)
State University Hospital Upstate Medical Center						
Parker F	326	5	1.53	1.74	2.26	(0.73, 5.27)
Picone A	286	11	3.85	1.71	5.79 *	(2.89, 10.36)
Ryan P	206	7	3.40	1.44	6.06	(2.43, 12.49)
All Others	312	11	3.53	1.67	5.43 *	(2.71, 9.72)
TOTAL	1130	34	3.01	1.66	4.66 *	(3.23, 6.51)
Strong Memorial Hospital						
Hicks G	574	21	3.66	3.04	3.09	(1.91, 4.72)
Risher W	607	18	2.97	2.04	3.73	(2.21, 5.89)
All Others	35	2	5.71	2.39	6.13	(0.69, 22.14)
TOTAL	1216	41	3.37	2.52	3.43	(2.46, 4.65)
United Health Services - Wilson Division						
Cunningham J R	391	9	2.30	2.34	2.53	(1.15, 4.80)
Wong K	346	7	2.02	2.09	2.49	(1.00, 5.12)
Yousuf M	386	12	3.11	3.06	2.60	(1.34, 4.55)
TOTAL	1123	28	2.49	2.51	2.55	(1.69, 3.68)

Table 3 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
University Hospital (Stony Brook)						
Bilfinger T	285	7	2.46	3.84	1.64	(0.66, 3.38)
Hartman A	591	8	1.35	2.37	1.47	(0.63, 2.89)
Seifert F	226	11	4.87	2.74	4.56	(2.28, 8.17)
All Others	183	5	2.73	3.19	2.20	(0.71, 5.13)
TOTAL	1285	31	2.41	2.88	2.15	(1.46, 3.06)
University Hospital of Brooklyn						
Zisbrod Z	413	11	2.66	3.04	2.25	(1.12, 4.02)
All Others	333	10	3.00	2.34	3.29	(1.58, 6.05)
TOTAL	746	21	2.82	2.73	2.65	(1.64, 4.05)
Westchester County Medical Center						
Axelrod H	307	11	3.58	3.35	2.75	(1.37, 4.92)
Fleisher A	419	7	1.67	2.21	1.94	(0.78, 4.00)
Lafaro R	377	19	5.04	2.11	6.14 *	(3.70, 9.59)
Moggio R	348	6	1.72	2.44	1.82	(0.66, 3.96)
Pooley R	280	18	6.43	2.15	7.68 *	(4.55, 12.14)
Sarabu M	359	2	0.56	2.78	0.52 **	(0.06, 1.86)
All Others	27	1	3.70	2.17	4.38	(0.06, 24.35)
TOTAL	2117	64	3.02	2.48	3.13	(2.41, 4.00)
Winthrop - University Hospital						
Kofsky E	228	5	2.19	2.16	2.61	(0.84, 6.09)
Mohtashemi M	249	7	2.81	3.10	2.33	(0.93, 4.79)
Schubach S	494	11	2.23	3.19	1.79	(0.89, 3.21)
Scott W	326	4	1.23	3.17	0.99 **	(0.27, 2.55)
All Others	392	22	5.61	4.10	3.51	(2.20, 5.32)
TOTAL	1689	49	2.90	3.25	2.29	(1.70, 3.03)
Statewide Totals	54024	1387	2.57	2.57	2.57	

* Risk-adjusted mortality rate is significantly higher than statewide rate.

** Risk-adjusted mortality rate is significantly lower than statewide rate.

Performed operations in another New York State hospital.

Performed operations in two or more other New York State hospitals.

OMR - The observed mortality rate is the number of observed deaths divided by the number of patients.

EMR - The expected mortality rate is the sum of the predicted probabilities of death for all patients divided by the total number of patients.

RAMR - the risk-adjusted mortality rate is the best estimate, based on the statistical model, of what the provider's mortality rate would have been if the provider had a mix of patients identical to the statewide mix. It is computed as the quotient of the OMR and the EMR (OMR/EMR) multiplied by the statewide mortality rate for the time period.

Note: Only surgeons performing 200 or more operations in 1993-1995 at the hospital identified are listed by name in Table 3.

TABLE 4: Summary Information for Surgeons Practicing at More Than One Hospital Performing at least 200 Isolated CABG Operations in 1993-1995 in at least Two Hospitals

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Acinapura A						
Maimonides	234	5	2.14	2.41	2.28	(0.74, 5.32)
St. Vincent's	77	2	2.60	1.23	5.44	(0.61, 19.65)
Total	311	7	2.25	2.11	2.73	(1.10, 5.64)
Banker M						
Albany Med Ctr	252	4	1.59	1.40	2.90	(0.78, 7.43)
St. Peter's	105	1	0.95	2.17	1.13	(0.01, 6.26)
Total	357	5	1.40	1.63	2.21	(0.71, 5.15)
Bell-Thomson J						
Erie County	540	8	1.48	1.51	2.53	(1.09, 4.98)
Millard Fillmore	36	1	2.78	2.12	3.37	(0.04, 18.73)
Total	576	9	1.56	1.54	2.60	(1.19, 4.93)
Bennett E						
Albany Med Ctr	281	1	0.36	2.37	0.39 **	(0.01, 2.15)
Ellis Hospital	2	0	0.00	1.94	0.00	(0.00, 100.00)
St. Peter's	415	7	1.69	2.19	1.97	(0.79, 4.07)
Total	698	8	1.15	2.26	1.30 **	(0.56, 2.56)
Britton L						
Albany Med Ctr	462	7	1.52	1.95	2.00	(0.80, 4.12)
Ellis Hospital	5	0	0.00	1.57	0.00	(0.00, 100.00)
Total	467	7	1.50	1.94	1.98	(0.79, 4.08)
Canavan T						
Albany Med Ctr	588	4	0.68	1.87	0.93 **	(0.25, 2.39)
Ellis Hospital	4	0	0.00	1.36	0.00	(0.00, 100.00)
Total	592	4	0.68	1.87	0.93 **	(0.25, 2.38)
Colvin S						
Bellevue	51	5	9.80	2.64	9.54 *	(3.07, 22.26)
NYU Med Ctr	276	14	5.07	3.96	3.29	(1.80, 5.51)
Total	327	19	5.81	3.76	3.97	(2.39, 6.20)
Culliford A						
Bellevue	1	0	0.00	0.20	0.00	(0.00, 100.00)
NYU Med Ctr	380	6	1.58	3.16	1.28	(0.47, 2.80)
Total	381	6	1.57	3.15	1.28	(0.47, 2.80)
Cunningham J N						
Maimonides	371	14	3.77	2.71	3.57	(1.95, 5.99)
Univ Hosp Brooklyn	45	1	2.22	2.43	2.34	(0.03, 13.04)
Total	416	15	3.61	2.68	3.45	(1.93, 5.69)

Table 4 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Dal Col R						
Albany Med Ctr	7	0	0.00	0.76	0.00	(0.00, 100.00)
Ellis Hospital	46	2	4.35	2.50	4.47	(0.50, 16.14)
St. Peter's	536	4	0.75	2.43	0.79 **	(0.21, 2.02)
Total	589	6	1.02	2.42	1.08 **	(0.39, 2.35)
Frymus M						
Montefiore-Moses	2	0	0.00	1.07	0.00	(0.00, 100.00)
Montefiore-Weiler	378	12	3.17	2.60	3.14	(1.62, 5.48)
Total	380	12	3.16	2.59	3.13	(1.62, 5.47)
Galloway A						
Bellevue	53	1	1.89	2.27	2.13	(0.03, 11.86)
NYU Med Ctr	249	8	3.21	3.01	2.74	(1.18, 5.40)
Total	302	9	2.98	2.88	2.65	(1.21, 5.04)
Jennings L						
Erie County	2	0	0.00	3.22	0.00	(0.00, 100.00)
Millard Fillmore	498	18	3.61	2.21	4.19	(2.48, 6.63)
Total	500	18	3.60	2.22	4.17	(2.47, 6.59)
McIlduff J						
Ellis Hospital	246	1	0.41	2.05	0.51	(0.01, 2.83)
St. Peter's	172	4	2.33	3.89	1.53	(0.41, 3.93)
Total	418	5	1.20	2.81	1.09 **	(0.35, 2.55)
Miller S						
Albany Med Ctr	290	3	1.03	2.36	1.13	(0.23, 3.29)
Ellis Hospital	1	0	0.00	1.08	0.00	(0.00, 100.00)
St. Peter's	198	3	1.52	3.42	1.14	(0.23, 3.32)
Total	489	6	1.23	2.78	1.13 **	(0.41, 2.46)
Older T						
Ellis Hospital	182	4	2.20	1.75	3.23	(0.87, 8.28)
St. Peter's	187	8	4.28	2.85	3.86	(1.66, 7.61)
Total	369	12	3.25	2.30	3.63	(1.87, 6.33)
Ribakove G						
Bellevue	79	3	3.80	2.24	4.36	(0.88, 12.73)
NYU Med Ctr	141	9	6.38	4.98	3.29	(1.50, 6.24)
Total	220	12	5.45	4.00	3.50	(1.81, 6.12)

Table 4 continued

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
Saifi J						
Albany Med Ctr	2	0	0.00	4.25	0.00	(0.00, 100.00)
Arnot-Ogden	54	0	0.00	1.90	0.00	(0.00, 9.19)
Ellis Hospital	346	6	1.73	1.58	2.82	(1.03, 6.14)
St. Peter's	1	0	0.00	14.57	0.00	(0.00, 64.66)
Total	403	6	1.49	1.67	2.29	(0.84, 4.99)
Walsh J						
Albany Med Ctr	1	0	0.00	2.12	0.00	(0.00, 100.00)
Millard Fillmore	46	2	4.35	2.23	5.00	(0.56, 18.06)
St. Peter's	156	8	5.13	3.36	3.92	(1.69, 7.73)
Total	203	10	4.93	3.09	4.09	(1.96, 7.52)

* Risk-adjusted rate is significantly higher than statewide rate.

** Risk-adjusted rate is significantly lower than statewide rate.

OMR - The observed mortality rate is the number of observed deaths divided by the number of patients.

EMR - The expected mortality rate is the sum of the predicted probabilities of death for all patients divided by the total number of patients.

RAMR - The risk-adjusted mortality rate is the best estimate, based on the statistical model, of what the provider's mortality rate would have been if the provider had a mix of patients identical to the statewide mix. It is computed as the quotient of the OMR and the EMR(OMR/EMR) multiplied by the statewide mortality rate for the time period.

Note: Only surgeons practicing at more than one hospital and performing 200 or more operations in New York State in 1993-1995 are listed in Table 4.

SURGEON AND HOSPITAL VOLUMES FOR ADULT CARDIAC SURGERY AND FOR ISOLATED CABG SURGERY (1993-1995)

Table 5 presents, for each hospital and for each surgeon performing at least 200 isolated CABG operations at that hospital in 1993-1995, the total number of adult cardiac surgeries performed, the total number of isolated CABG operations performed and the percentage of all adult cardiac surgeries that were isolated CABG operations. As in Table 3, results for surgeons who performed fewer than 200 isolated CABG operations are grouped together in an "All Others" category.

Isolated CABG volumes include patients who undergo bypass of one or more of the coronary

arteries with no other major heart surgery during the same admission. Total adult cardiac surgery cases include isolated CABG, CABG combined with another cardiac procedure such as valve repair or replacement, single or multiple valve replacements and any other surgery on the heart or great vessels.

As indicated, the statewide percentage of adult cardiac surgeries that were isolated CABG operations in 1993-1995 was 74.19 percent (54,024 CABG operations out of a total of 72,816 total adult cardiac surgeries).

Table 5: Total Cardiac Surgery and Isolated CABG Surgery Volumes by Hospital and Surgeon, 1993 - 1995 Discharges

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
Albany Medical Center Hospital			
Banker M	274	252	91.97
Bennett E	346	281	81.21
Britton L	628	462	73.57
Canavan T	670	588	87.76
Ferraris V	385	279	72.47
Foster E	376	248	65.96
Kelley J	261	221	84.67
Luber J	652	453	69.48
Miller S	339	290	85.55
All Others	254	202	79.53
TOTAL	4185	3276	78.28
Arnot-Ogden Memorial Hospital			
Borja A	323	261	80.80
Quintos E	262	230	87.79
Vaughan J	244	213	87.30
All Others	66	54	81.82
TOTAL	895	758	84.69
Bellevue Hospital Center			
TOTAL	499	270	54.11
Beth Israel Medical Center			
Tranbaugh R	1020	684	67.06
All Others	190	175	92.11
TOTAL	1210	859	70.99

Table 5 continued

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
Buffalo General Hospital			
Bergsland J	706	530	75.07
Bhayana J	728	393	53.98
Grosner G	746	681	91.29
Lajos T	618	524	84.79
Levinsky L	238	226	94.96
Lewin A	698	656	93.98
Raza S	637	486	76.30
All Others	110	99	90.00
TOTAL	4481	3595	80.23
Ellis Hospital			
Depan H	635	456	71.81
McIllduff J	295	246	83.39
Saifi J	385	346	89.87
All Others	314	240	76.43
TOTAL	1629	1288	79.07
Erie County Medical Center			
Bell-Thomson J	661	540	81.69
All Others	2	2	100.00
TOTAL	663	542	81.75
Lenox Hill Hospital			
Stelzer P	795	473	59.50
Subramanian V	1588	1302	81.99
All Others	315	252	80.00
TOTAL	2698	2027	75.13
Long Island Jewish Medical Center			
Graver L	821	576	70.16
Palazzo R	476	414	86.97
All Others	197	160	81.22
TOTAL	1494	1150	76.97
Maimonides Medical Center			
Acinapura A	306	234	76.47
Cunningham J N	517	371	71.76
Jacobowitz I	1628	1318	80.96
Sabado M	500	415	83.00
All Others	155	134	86.45
TOTAL	3106	2472	79.59

Table 5 continued

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
Millard Fillmore Hospital			
Aldridge J	618	550	89.00
Guarino R	515	477	92.62
Jennings L	569	498	87.52
Major W	261	243	93.10
All Others	231	190	82.25
TOTAL	2194	1958	89.24
Montefiore Medical Center - Moses Division			
Attai L	610	451	73.93
Brodman R	462	313	67.75
Merav A	382	280	73.30
All Others	202	140	69.31
TOTAL	1656	1184	71.50
Montefiore Medical Center - Weiler Division			
Frymus M	454	378	83.26
Sisto D	421	315	74.82
All Others	262	136	51.91
TOTAL	1137	829	72.91
Mount Sinai Hospital			
Ergin M	861	553	64.23
Galla J	398	241	60.55
Lansman S	654	407	62.23
All Others	642	252	39.25
TOTAL	2555	1453	56.87
New York Hospital - Cornell			
Gold J	366	223	60.93
Isom O	562	272	48.40
Krieger K	1112	807	72.57
Lang S	1231	852	69.21
Rosengart T	719	512	71.21
All Others	253	181	71.54
TOTAL	4243	2847	67.10
New York University Medical Center			
Colvin S	630	276	43.81
Culliford A	692	380	54.91
Esposito R	445	287	64.49
Galloway A	481	249	51.77
Spencer F	425	204	48.00
All Others	679	479	70.54
TOTAL	3352	1875	55.94

Table 5 continued

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
North Shore University Hospital			
Hall M	896	672	75.00
Nelson R	273	209	76.56
Pogo G	605	475	78.51
Tortolani A	503	402	79.92
All Others	61	33	54.10
TOTAL	2338	1791	76.60
Presbyterian Hospital-City of New York			
Michler R	444	227	51.13
Oz M	507	258	50.89
Rose E	751	475	63.25
Smith C	996	641	64.36
All Others	397	194	48.87
TOTAL	3095	1795	58.00
Rochester General Hospital			
Cheeran D	1049	846	80.65
Kirshner R	1107	900	81.30
Knight P	1255	980	78.09
All Others	312	265	84.94
TOTAL	3723	2991	80.34
St. Francis Hospital			
Bercow N	663	534	80.54
Damus P	1139	627	55.05
Durban L	600	476	79.33
Lamendola C	393	323	82.19
Robinson N	1271	928	73.01
Taylor J	1237	975	78.82
Weisz D	845	634	75.03
All Others	397	275	69.27
TOTAL	6545	4772	72.91
St. Joseph's Hospital Health Center			
Marvasti M	681	493	72.39
Nast E	530	476	89.81
Nazem A	713	620	86.96
Rosenberg J	836	569	68.06
TOTAL	2760	2158	78.19

Table 5 continued

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
St. Luke's Roosevelt Hospital-St. Luke's Div.			
Anagnostopoulos C	347	212	61.10
Aronis M	475	417	87.79
Mindich B	524	324	61.83
Swistel D	457	382	83.59
All Others	104	65	62.50
TOTAL	1907	1400	73.41
St. Peter's Hospital			
Bennett E	544	415	76.29
Dal Col R	630	536	85.08
All Others	1003	819	81.66
TOTAL	2177	1770	81.30
St. Vincent's Hospital and Medical Center			
Galdieri R	593	493	83.14
McGinn J	667	532	79.76
Tyras D	688	556	80.81
All Others	96	77	80.21
TOTAL	2044	1658	81.12
State University Hospital Upstate Medical Center			
Parker F	492	326	66.26
Picone A	363	286	78.79
Ryan P	240	206	85.83
All Others	450	312	69.33
TOTAL	1545	1130	73.14
Strong Memorial Hospital			
Hicks G	857	574	66.98
Risher W	843	607	72.00
All Others	77	35	45.45
TOTAL	1777	1216	68.43
United Health Services - Wilson Division			
Cunningham J R	479	391	81.63
Wong K	407	346	85.01
Yousuf M	478	386	80.75
TOTAL	1364	1123	82.33
University Hospital (Stony Brook)			
Bilfinger T	332	285	85.84
Hartman A	754	591	78.38
Seifert F	350	226	64.57
All Others	223	183	82.06
TOTAL	1659	1285	77.46

Table 5 continued

	Total Cardiac Surgery	Isolated CABGs	% Isolated CABG
University Hospital of Brooklyn			
Zisbrod Z	498	413	82.93
All Others	465	333	71.61
TOTAL	963	746	77.47
Westchester County Medical Center			
Axelrod H	365	307	84.11
Fleisher A	537	419	78.03
Lafaro R	512	377	73.63
Moggio R	489	348	71.17
Pooley R	368	280	76.09
Sarabu M	536	359	66.98
All Others	80	27	33.75
TOTAL	2887	2117	73.33
Winthrop - University Hospital			
Kofsky E	263	228	86.69
Mohtashemi M	285	249	87.37
Schubach S	657	494	75.19
Scott W	418	326	77.99
All Others	472	392	83.05
TOTAL	2095	1689	80.62
STATEWIDE TOTAL	72816	54024	74.19

MEDICAL TERMINOLOGY

angina pectoris — the pain or discomfort felt when blood and oxygen flow to the heart are impeded by blockage in the coronary arteries. Can also be caused by an arterial spasm.

angioplasty, also known as **percutaneous transluminal coronary angioplasty (PTCA)** - in this procedure, a balloon catheter is threaded up to the site of blockage in an artery in the heart, and is then inflated to push arterial plaque against the wall of the artery to create a wider channel in the artery.

arteriosclerosis — the group of diseases characterized by thickening and loss of elasticity of the arterial walls, popularly called “hardening of the arteries.” Also called *atherosclerotic coronary artery disease* or *coronary artery disease*.

atherosclerosis — one form of arteriosclerosis in which plaques or fatty deposits form in the inner layer of the arteries.

coronary artery bypass graft surgery (CABG) is a procedure in which a vein or artery from another part of the body is used to create an alternate path for blood to flow to the heart, bypassing the arterial blockage. Typically, a section of one of the large saphenous veins in the leg, the radial artery in the arm or the mammary artery in the chest is used to construct the bypass. One or more bypasses may be performed during a single operation. When no other major heart surgery (such as valve replacement) is included, the operation is referred to as an **isolated CABG**.

double, triple, quadruple bypass — the average number of bypass grafts created during coronary artery bypass graft surgery is three or four. Generally, all significantly blocked arteries are bypassed unless they enter areas of the heart that are permanently damaged by previous heart attacks. Five or more bypasses are occasionally created. Multiple bypasses are often performed to provide several alternate routes for the blood flow and to improve the long-term success of the procedure, not necessarily because the patient’s condition is more severe.

cardiac catheterization — also known as *coronary angiography* - a procedure for diagnosing the condition of the heart and the arteries connecting to it. A thin tube threaded through an artery to the heart releases a dye, which allows doctors to observe blockages with an X-ray camera. This procedure is required before coronary bypass surgery.

cardiovascular disease — disease of the heart and blood vessels, the most common form is coronary artery disease.

coronary arteries — the arteries that supply the heart muscle with blood. When they are narrowed or blocked, blood and oxygen cannot flow freely to the heart muscle or myocardium.

ischemic heart disease (ischemia) — heart disease that occurs as a result of inadequate blood supply to the heart muscle or myocardium.

myocardial infarction — partial destruction of the heart muscle due to interrupted blood supply, also called a *heart attack* or *coronary thrombosis*.

plaque — also called *atheroma*, this is the fatty deposit in the coronary artery that can block blood flow.

risk factors for heart disease — certain risk factors have been found to increase the likelihood of developing heart disease. Some are controllable or avoidable, and some cannot be controlled. The biggest heart disease risk factors are heredity, gender and age, all of which cannot be controlled. Men are much more likely to develop heart disease than women before the age of 55, although it is the number one killer of both men and women. The risk increases with age, so that half of all cases are in those who are over 75 years old.

Some controllable risk factors that contribute to a higher likelihood of developing coronary artery disease are high cholesterol levels, cigarette smoking, high blood pressure (hypertension), obesity, a sedentary lifestyle or lack of exercise, diabetes and stress or type A personality characteristics.

stenosis — the narrowing of an artery due to blockage. *Restenosis* is when the narrowing recurs after surgery.

NEW YORK STATE CARDIAC SURGERY CENTERS

Albany Medical Center Hospital
New Scotland Avenue
Albany, New York 12208

Bellevue Hospital
First Avenue and 27th Street
New York, New York 10016

Buffalo General Hospital
100 High Street
Buffalo, New York 14203

Erie County Medical Center
462 Grider Street
Buffalo, New York 14215

Long Island Jewish Medical Center
270-05 76th Avenue
New Hyde Park, New York 11040

Millard Fillmore Hospital
3 Gates Circle
Buffalo, New York 14209

Montefiore Medical Center-Weiler Hospital
1825 Eastchester Road
Bronx, New York 10461

New York Hospital-Cornell Medical Center
525 East 68th Street
New York, New York 10021

New York Hospital Medical Center-Queens
56-45 Main Street
Flushing, New York 11355
(beginning 1996)

North Shore University Hospital
300 Community Drive
Manhasset, New York 11030

Rochester General Hospital
1425 Portland Avenue
Rochester, New York 14621-3079

St Joseph's Hospital Health Center
301 Prospect Avenue
Syracuse, New York 13203

St. Peter's Hospital
315 South Manning Boulevard
Albany, New York 12208

Arnot Ogden Medical Center
600 Roe Avenue
Elmira, New York 14905

Beth Israel Medical Center
10 Nathan D. Perlman Place
New York, New York 10003

Ellis Hospital
1101 Nott Street
Schenectady, New York 12308

Lenox Hill Hospital
100 East 77th Street
New York, New York 10021

Maimonides Medical Center
4802 Tenth Avenue
Brooklyn, New York 11219

Montefiore Medical Center
Henry & Lucy Moses Division
111 East 210th Street
Bronx, New York 11219

Mount Sinai Medical Center
One Gustave L. Levy Place
New York, New York 10029

New York University Medical Center
550 First Avenue
New York, New York 10016

Presbyterian Hospital - Atchley Pavillion
161 Fort Washington Avenue
New York, New York 10032

St. Francis Hospital
Port Washington Boulevard
Roslyn, New York 11576

St. Luke's Roosevelt Hospital Center
11-11 Amsterdam Avenue at 114th Street
New York, New York 10025

St Vincent's Hospital & Medical Center of New York
153 West 11th Street
New York, New York 10011

United Health Services
Wilson Hospital Division
33-57 Harrison Street
Johnson City, New York 13790

Strong Memorial Hospital
601 Elmwood Avenue
Rochester, New York 14642

University Hospital of Brooklyn
450 Lenox Road
Brooklyn, New York 11203

SUNY Upstate Medical Center
750 East Adams Street
Syracuse, New York 13210

University Hospital - Stony Brook
SUNY at Stony Brook
Stony Brook, New York 11794-8410

Westchester County Medical Center
Grasslands Reservation
Valhalla, New York 10595

Winthrop University Hospital
259 First Street
Mineola, New York 11501

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George E. Pataki, Governor

Department of Health
Barbara A. DeBuono, M.D., M.P.H., Commissioner