

**CORONARY  
ARTERY  
BYPASS  
SURGERY**

**in  
New York State**

***1997-1999***



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# INTRODUCTION

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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.

We 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 after 1999. Important changes may have taken place in some hospitals during that time period.

In developing treatment plans, it is important 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.

Providers of this state and the Cardiac Advisory Committee are to be commended 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.





## 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 coronary interventions (PCI).

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 (CAC), 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' pre-operative 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

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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 1999 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, 1997 and December 31, 1999 are included in the three-year results.

Isolated CABG surgery represented 70.24 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 1997 through 1999.

## 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, Data Validation and Identifying In-Hospital Deaths**

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 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 procedure, 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-matching of cardiac surgery data with other Department of Health databases and a review of medical records for a selected sample of cases. These activities are extremely helpful in ensuring

consistent interpretation of data elements across hospitals.

The analysis bases mortality on deaths occurring during the same hospital stay in which a patient underwent cardiac surgery. In the past, the data validation activities have focused on the acute care stay at the surgery center. However, changes in the health care system have resulted in an increasing number of administrative discharges within the hospital. For example, a patient may be discharged from an acute care bed to a hospice or rehabilitation bed within the same hospital stay in order to differentiate reimbursement for differing levels of care.

In this report, an in-hospital death is defined as a patient who died subsequent to CABG surgery during the same admission, or was discharged to hospice care.

### **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 factors 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 a previous stroke, for example, has a very different risk profile than a 40-year-old with no previous stroke.

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 or her specific characteristics.

Doctors and patients should review individual risk profiles together. Treatment decisions must be made by doctors and patients together after 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 (2.25% in 1999) 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. To prevent misinterpretation of differences caused by chance variation, confidence intervals are reported in the 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 coronary artery bypass graft 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**

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### **1999 Risk Factors for CABG Surgery**

The significant preoperative risk factors for coronary artery bypass surgery in 1999 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 diabetes is 1.522. This means that a patient who had diabetes prior to surgery is approximately 1.522 times as likely to die in the hospital as a patient who did not have diabetes 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 had diabetes or has not had diabetes). Exceptions are age 55 years and,

ejection fraction (which is a measure of the heart's ability to pump blood).

For age, the odds ratio roughly represents the number of times more likely a patient who is older than 55 is to die in the hospital than a patient who is one year younger. Thus, a patient undergoing CABG Surgery who is 72 years old has a chance of dying that is approximately 1.053 times the chance that a patient 71 years old undergoing CABG has of dying in the hospital.

The odds ratios for the categories for ejection fraction are relative to the omitted range (40% and higher). Thus, patients with an ejection fraction of less than 20% have odds of dying in the hospital that are 2.071 times the odds of a person with an ejection fraction of 40% or higher, all other risk factors being the same.

**Table 1:** Multivariable risk factor equation for CABG hospital deaths in New York State in 1999.

Patient Risk Factor	Prevalence (%)	Logistic Regression		
		Coefficient	P-Value	Odds Ratio
<b>Demographic</b>				
Age > 55 years of age	...	0.0513	<.0001	1.053
Female Gender	28.54	0.5333	<.0001	1.705
<b>Hemodynamic State</b>				
Unstable	1.25	1.0654	<.0001	2.902
Shock	0.43	2.1982	<.0001	9.009
CPR	0.20	2.2085	<.0001	9.102
<b>Comorbidities</b>				
Diabetes	31.73	0.4199	<.0001	1.522
Extensively Calcified Aorta	5.55	0.7242	<.0001	2.063
Hepatic Failure	0.14	2.2622	<.0001	9.605
Renal Failure requiring Dialysis	1.27	2.0061	<.0001	7.435
<b>Severity of Atherosclerotic Process</b>				
Carotid/Cerebrovascular Disease	14.40	0.4543	0.0002	1.575
Aortoiliac Disease	4.89	0.6444	<.0001	1.905
<b>Ventricular Function</b>				
Ejection Fraction < 20	1.84	0.7278	0.0039	2.071
Ejection Fraction 20-39	20.74	0.4272	0.0003	1.533
Previous MI < 24 hours	1.74	1.0792	<.0001	2.942
Previous MI 1-7 days	15.81	0.8621	<.0001	2.368
Previous MI > 7 days	36.94	0.3739	0.0045	1.453
Previous Open Heart Operations	5.82	1.0936	<.0001	2.985
Intercept	=	-5.8622		
C Statistic	=	0.793		

## 1999 HOSPITAL OUTCOMES FOR CABG SURGERY

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Table 2 and Figure 1 present the 1999 CABG surgery results for the 33 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 1999 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 and a 95% confidence interval for the risk-adjusted rate.

Definitions of key terms follow:

The **observed mortality rate (OMR)** is the number of observed deaths divided by the total number of patients who underwent isolated CABG surgery.

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 18,116 CABG operations performed at the 33 hospitals was 2.24%. Observed mortality rates ranged from 0.50% to 7.75%. The range in expected mortality rates, which measure patient severity of illness, was 1.52% to 3.11%.

The risk-adjusted mortality rates, which are used to measure performance, ranged from 0.68% to 7.00%. One hospital, University Hospital of Brooklyn, had a risk-adjusted mortality rate that was significantly higher than the statewide rate. Two hospitals, St. Francis Hospital and St. Peter's Hospital had significantly lower risk-adjusted rates than the statewide average.

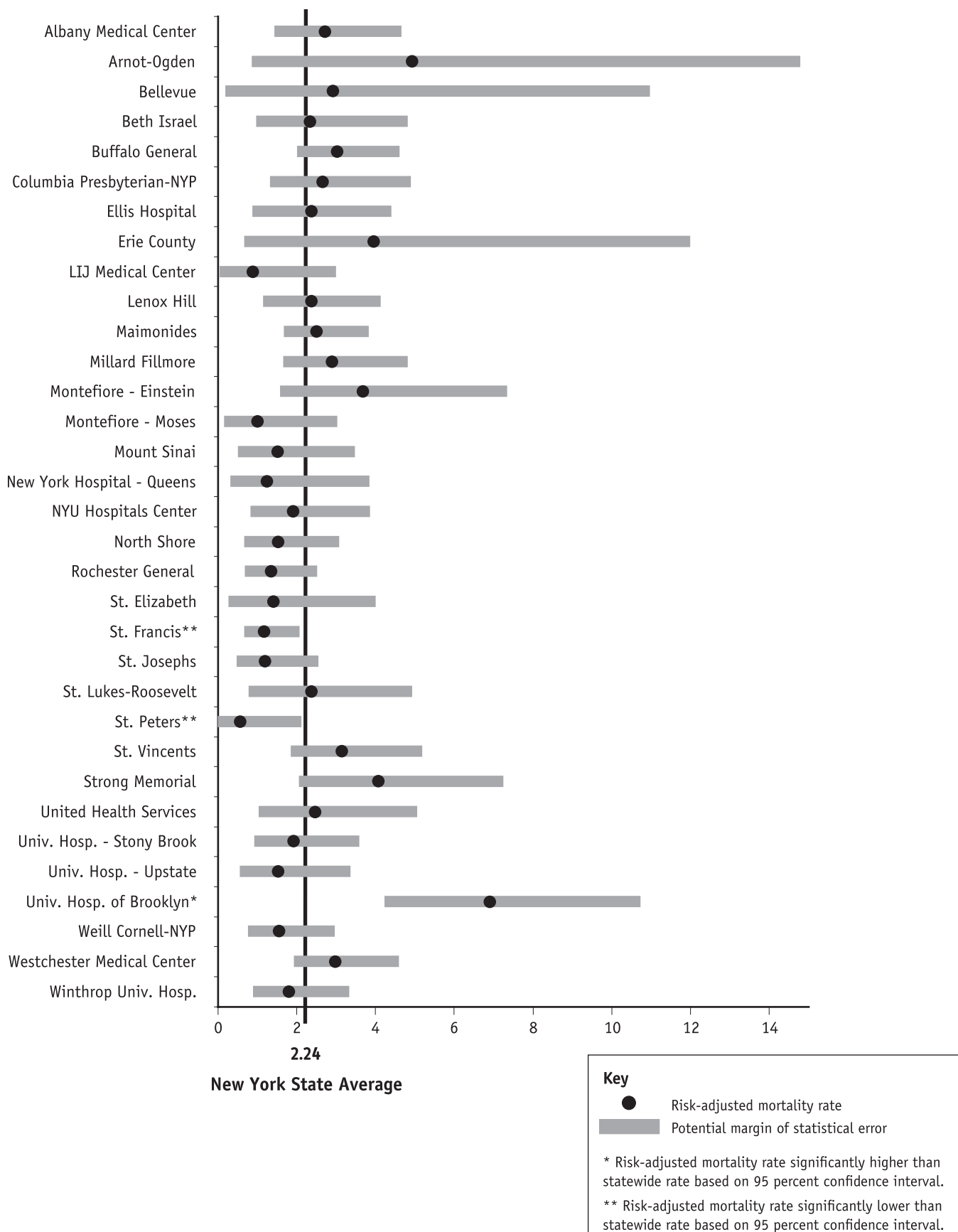
**Table 2:** Observed, Expected, and Risk-Adjusted Mortality Rates (RAMR) for CABG Surgery in New York State, 1999 Discharges (Listed Alphabetically by Hospital)

Hospital	Cases	Deaths	OMR	EMR	RAMR	95% CI for RAMR
Albany Medical Center	759	16	2.11	1.69	2.79	(1.59, 4.53)
Arnot-Ogden	88	3	3.41	1.52	5.03	(1.01, 14.69)
Bellevue	80	2	2.50	1.86	3.01	(0.34, 10.85)
Beth Israel	381	9	2.36	2.15	2.47	(1.13, 4.68)
Buffalo General	1042	32	3.07	2.17	3.16	(2.16, 4.47)
Columbia Presbyterian	553	13	2.35	1.91	2.76	(1.47, 4.72)
Ellis Hospital	452	9	1.99	1.99	2.25	(1.03, 4.27)
Erie County	106	3	2.83	1.56	4.06	(0.82,11.86)
LIJ Medical Center	375	3	0.80	1.83	0.98	(0.20, 2.86)
Lenox Hill	612	14	2.29	2.15	2.38	(1.30, 4.00)
Maimonides	930	34	3.66	3.11	2.64	(1.83, 3.69)
Millard Fillmore	748	19	2.54	1.89	3.01	(1.81, 4.70)
Montefiore - Einstein	278	9	3.24	1.91	3.80	(1.74, 7.22)
Montefiore - Moses	376	4	1.06	2.11	1.13	(0.30, 2.90)
Mount Sinai	410	7	1.71	2.36	1.62	(0.65, 3.34)
NY Hospital - Queens	280	3	1.07	1.87	1.28	(0.26, 3.75)
NYU Hospitals Center	366	10	2.73	3.02	2.03	(0.97, 3.73)
North Shore	816	11	1.35	1.84	1.65	(0.82, 2.94)
Rochester General	874	16	1.83	2.79	1.47	(0.84, 2.38)
St. Elizabeth	352	4	1.14	1.69	1.51	(0.41, 3.87)
St. Francis	1804	23	1.27	2.22	1.29 **	(0.81, 1.93)
St. Josephs	724	10	1.38	2.35	1.32	(0.63, 2.42)
St. Lukes-Roosevelt	245	7	2.86	2.75	2.33	(0.93, 4.80)
St. Peters	605	3	0.50	1.64	0.68 **	(0.14, 1.98)
St. Vincents	545	20	3.67	2.52	3.27	(1.99, 5.05)
Strong Memorial	329	13	3.95	2.13	4.16	(2.21, 7.11)
United Health Services	320	9	2.81	2.43	2.59	(1.18, 4.92)
Univ Hosp-Stony Brook	719	13	1.81	2.01	2.02	(1.07, 3.45)
Univ. Hosp. - Upstate	473	8	1.69	2.30	1.64	(0.71, 3.24)
Univ. Hosp. of Brooklyn	284	22	7.75	2.48	7.00 *	(4.39,10.60)
Weill Cornell-NYP	704	14	1.99	2.64	1.69	(0.92, 2.83)
Westchester Med. Ctr.	816	29	3.55	2.57	3.10	(2.08, 4.46)
Winthrop Univ. Hosp.	670	14	2.09	2.46	1.91	(1.04, 3.20)
<b>Total</b>	<b>18116</b>	<b>406</b>	<b>2.24</b>			

\* 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 CABG in New York State, 1999 Discharges (Listed Alphabetically by Hospital)**





# 1997-1999 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% confidence interval for the risk-adjusted mortality rate for 1997-99 for each of the 33 hospitals performing CABG surgery during the time period.

This hospital information is presented for each surgeon (a) who performed 200 or more isolated CABG operations during 1997-1999, and/or (b) who performed at least one isolated CABG operation in each of the years 1997-1999.

The results for surgeons not meeting the above criteria are grouped together and reported as "All Others" in the hospital in which the operations were performed. Surgeons who met the above criteria and who performed operations in more than one hospital

during the period 1997-1999 are noted in the table and are listed in all hospitals in which they performed CABG operations.

Also, surgeons who met criterion (a) and/or criterion (b) above and have 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:** Surgeon Observed, Expected, and Risk-Adjusted Mortality Rates (RAMR) for Coronary Artery Bypass Grafts in New York State, 1997-1999 Discharges

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Albany Medical Center Hospital</b>						
Britton L	362	3	0.83	1.55	1.18	(0.24, 3.44)
Canavan T	480	2	0.42	1.58	0.58**	(0.07, 2.10)
#Joyce F	82	2	2.44	1.34	4.02	(0.45, 14.53)
Kelley J	577	19	3.29	1.59	4.56*	(2.75, 7.13)
Miller S	434	7	1.61	1.84	1.94	(0.78, 3.99)
#Sardella G	106	0	0.00	1.27	0.00	(0.00, 6.00)
All Others	527	12	2.28	1.69	2.96	(1.53, 5.18)
<b>TOTAL</b>	<b>2568</b>	<b>45</b>	<b>1.75</b>	<b>1.63</b>	<b>2.38</b>	<b>(1.73, 3.18)</b>
<b>Arnot-Ogden Memorial Hospital</b>						
#Quintos E	222	12	5.41	1.92	6.22*	(3.21, 10.86)
All Others	100	0	0.00	1.79	0.00	(0.00, 4.53)
<b>TOTAL</b>	<b>322</b>	<b>12</b>	<b>3.73</b>	<b>1.88</b>	<b>4.38*</b>	<b>(2.26, 7.65)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Bellevue Hospital Center</b>						
#Colvin S	14	0	0.00	2.82	0.00	(0.00, 20.47)
#Galloway A	23	1	4.35	0.98	9.79	(0.13, 54.48)
#Glassman L	89	3	3.37	1.72	4.32	(0.87, 12.63)
#Ribakove G	57	3	5.26	1.60	7.27	(1.46, 21.25)
All Others	44	0	0.00	1.36	0.00	(0.00, 13.53)
<b>TOTAL</b>	<b>227</b>	<b>7</b>	<b>3.08</b>	<b>1.61</b>	<b>4.22</b>	<b>(1.69, 8.69)</b>
<b>Beth Israel Medical Center</b>						
##Geller C	11	0	0.00	1.64	0.00	(0.00, 44.93)
Harris L	204	3	1.47	1.90	1.70	(0.34, 4.98)
Hoffman D	272	6	2.21	1.96	2.48	(0.90, 5.39)
#Stelzer P	206	6	2.91	2.33	2.76	(1.01, 6.00)
Tranbaugh R	578	8	1.38	2.46	1.24	(0.54, 2.45)
<b>TOTAL</b>	<b>1271</b>	<b>23</b>	<b>1.81</b>	<b>2.23</b>	<b>1.79</b>	<b>(1.13, 2.68)</b>
<b>Buffalo General Hospital</b>						
#Bergsland J	549	19	3.46	2.51	3.04	(1.83, 4.75)
Bhayana J	221	5	2.26	2.10	2.37	(0.77, 5.54)
Grosner G	679	11	1.62	1.93	1.85	(0.92, 3.31)
##Guarino R	2	0	0.00	0.94	0.00	(0.00, 100.0)
##Kerr P	2	0	0.00	1.67	0.00	(0.00, 100.0)
Lajos T	351	14	3.99	2.28	3.86	(2.11, 6.48)
Levinsky L	413	9	2.18	1.72	2.79	(1.27, 5.30)
Lewin A	503	13	2.58	1.60	3.56	(1.89, 6.08)
#Raza S	366	17	4.64	1.84	5.56*	(3.24, 8.91)
Salerno T	207	8	3.86	3.57	2.39	(1.03, 4.70)
All Others	48	3	6.25	3.54	3.90	(0.78, 11.38)
<b>TOTAL</b>	<b>3341</b>	<b>99</b>	<b>2.96</b>	<b>2.11</b>	<b>3.09*</b>	<b>(2.51, 3.77)</b>
<b>Columbia Presbyterian - NY Presbyterian Hospital</b>						
#Edwards N	270	8	2.96	2.28	2.87	(1.24, 5.65)
Oz M	644	13	2.02	2.00	2.22	(1.18, 3.80)
Rose E	223	3	1.35	1.54	1.92	(0.39, 5.62)
Smith C	564	7	1.24	1.70	1.61	(0.64, 3.32)
All Others	153	7	4.58	2.35	4.29	(1.72, 8.84)
<b>TOTAL</b>	<b>1854</b>	<b>38</b>	<b>2.05</b>	<b>1.92</b>	<b>2.35</b>	<b>(1.66, 3.23)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Ellis Hospital</b>						
#Dal Col R	1	0	0.00	0.41	0.00	(0.00, 100.0)
Depan H	384	8	2.08	1.55	2.96	(1.27, 5.83)
Reich H	393	5	1.27	1.57	1.79	(0.58, 4.18)
Saifi J	480	5	1.04	1.80	1.28	(0.41, 2.98)
All Others	179	2	1.12	1.42	1.73	(0.19, 6.26)
<b>TOTAL</b>	<b>1437</b>	<b>20</b>	<b>1.39</b>	<b>1.62</b>	<b>1.89</b>	<b>(1.15, 2.92)</b>
<b>Erie County Medical Center</b>						
Bell-Thomson J	241	3	1.24	1.42	1.93	(0.39, 5.65)
Datta S	153	3	1.96	1.22	3.53	(0.71, 10.32)
##Guarino R	4	0	0.00	1.07	0.00	(0.00, 100.0)
##Kerr P	1	0	0.00	4.72	0.00	(0.00, 100.0)
All Others	105	2	1.90	1.64	2.57	(0.29, 9.26)
<b>TOTAL</b>	<b>504</b>	<b>8</b>	<b>1.59</b>	<b>1.41</b>	<b>2.48</b>	<b>(1.07, 4.90)</b>
<b>Lenox Hill Hospital</b>						
#Connolly M	233	5	2.15	2.12	2.23	(0.72, 5.21)
##Geller C	72	3	4.17	1.68	5.48	(1.10, 16.02)
#Genovesi M	47	2	4.26	2.12	4.42	(0.50, 15.96)
##Jacobowitz I	360	10	2.78	2.54	2.41	(1.16, 4.44)
McCabe J	52	2	3.85	1.34	6.34	(0.71, 22.90)
##Sabado M	146	7	4.79	3.18	3.33	(1.33, 6.86)
Subramanian V	1044	35	3.35	2.58	2.87	(2.00, 3.99)
All Others	16	0	0.00	1.25	0.00	(0.00, 40.58)
<b>TOTAL</b>	<b>1970</b>	<b>64</b>	<b>3.25</b>	<b>2.47</b>	<b>2.90*</b>	<b>(2.23, 3.70)</b>
<b>Long Island Jewish Medical Center</b>						
Graver L	619	15	2.42	2.07	2.58	(1.45, 4.26)
Kline G	119	5	4.20	1.14	8.15*	(2.63, 19.03)
Palazzo R	458	4	0.87	1.66	1.16	(0.31, 2.97)
<b>TOTAL</b>	<b>1196</b>	<b>24</b>	<b>2.01</b>	<b>1.82</b>	<b>2.43</b>	<b>(1.56, 3.62)</b>
<b>Maimonides Medical Center</b>						
#Acinapura A	380	8	2.11	2.20	2.11	(0.91, 4.15)
#Anderson J	4	0	0.00	2.76	0.00	(0.00, 73.12)
#Connolly M	500	9	1.80	2.31	1.72	(0.79, 3.27)
#Cunningham J N	305	18	5.90	2.81	4.63*	(2.74, 7.32)

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Maimonides Medical Center</b> <i>continued:</i>						
#Genovesi M	119	5	4.20	2.89	3.21	(1.03, 7.49)
##Jacobowitz I	645	19	2.95	3.12	2.08	(1.25, 3.25)
#Ketosugbo A	30	1	3.33	2.34	3.14	(0.04, 17.50)
##Sabado M	46	3	6.52	3.10	4.64	(0.93, 13.56)
#Zisbrod Z	640	15	2.34	2.50	2.07	(1.16, 3.41)
All Others	114	8	7.02	3.29	4.70	(2.02, 9.26)
<b>TOTAL</b>	<b>2783</b>	<b>86</b>	<b>3.09</b>	<b>2.66</b>	<b>2.56</b>	<b>(2.05, 3.16)</b>
<b>Millard Fillmore Hospital</b>						
Aldridge J	336	7	2.08	1.86	2.47	(0.99, 5.09)
Ashraf M	633	11	1.74	1.99	1.92	(0.96, 3.44)
#Bergsland J	5	0	0.00	4.83	0.00	(0.00, 33.51)
##Guarino R	473	8	1.69	1.60	2.34	(1.01, 4.60)
Jennings L	413	7	1.69	1.81	2.06	(0.83, 4.25)
##Kerr P	219	9	4.11	2.20	4.12	(1.88, 7.82)
#Raza S	1	0	0.00	1.89	0.00	(0.00, 100.0)
All Others	140	6	4.29	1.99	4.74	(1.73, 10.32)
<b>TOTAL</b>	<b>2220</b>	<b>48</b>	<b>2.16</b>	<b>1.88</b>	<b>2.54</b>	<b>(1.87, 3.36)</b>
<b>Montefiore Medical Center - Einstein Division</b>						
#Brodman R	1	0	0.00	0.78	0.00	(0.00, 100.0)
#Camacho M	1	0	0.00	0.80	0.00	(0.00, 100.0)
#Crooke G	2	0	0.00	1.41	0.00	(0.00, 100.0)
Frater R	87	1	1.15	2.52	1.01	(0.01, 5.61)
#Frymus M	414	11	2.66	1.99	2.94	(1.46, 5.26)
#Gold J	34	0	0.00	1.55	0.00	(0.00, 15.34)
##Tortolani A	63	2	3.17	1.82	3.85	(0.43, 13.89)
All Others	291	5	1.72	2.22	1.71	(0.55, 3.99)
<b>TOTAL</b>	<b>893</b>	<b>19</b>	<b>2.13</b>	<b>2.08</b>	<b>2.25</b>	<b>(1.35, 3.51)</b>
<b>Montefiore Medical Center - Moses Division</b>						
Attai L	317	5	1.58	2.24	1.56	(0.50, 3.63)
#Brodman R	293	3	1.02	2.21	1.02	(0.21, 2.99)
#Camacho M	201	3	1.49	2.91	1.13	(0.23, 3.30)
#Crooke G	23	0	0.00	2.06	0.00	(0.00, 17.04)
#Frymus M	1	1	100.00	0.56	100.00*	(5.11, 100.0)
#Gold J	152	0	0.00	1.72	0.00	(0.00, 3.09)
Merav A	245	6	2.45	2.27	2.38	(0.87, 5.18)
All Others	10	0	0.00	1.36	0.00	(0.00, 59.54)
<b>TOTAL</b>	<b>1242</b>	<b>18</b>	<b>1.45</b>	<b>2.27</b>	<b>1.41</b>	<b>(0.83, 2.23)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Mount Sinai Hospital</b>						
Ergin M	342	6	1.75	2.14	1.81	(0.66, 3.93)
Galla J	242	8	3.31	2.62	2.78	(1.20, 5.49)
Griep R	28	0	0.00	2.19	0.00	(0.00, 13.19)
Lansman S	320	18	5.63	3.18	3.89*	(2.31, 6.15)
McCough J	241	9	3.73	2.36	3.49	(1.59, 6.62)
Nguyen K	91	3	3.30	3.04	2.39	(0.48, 6.99)
All Others	32	0	0.00	2.72	0.00	(0.00, 9.29)
<b>TOTAL</b>	<b>1296</b>	<b>44</b>	<b>3.40</b>	<b>2.61</b>	<b>2.87</b>	<b>(2.09, 3.85)</b>
<b>New York Hospital - Queens</b>						
#Altorki N	5	0	0.00	1.30	0.00	(0.00,100.0)
#Aronis M	41	0	0.00	2.36	0.00	(0.00, 8.34)
#Isom O	2	0	0.00	5.54	0.00	(0.00,72.93)
#Ko W	329	8	2.43	1.55	3.46	(1.49, 6.81)
##Lang S	498	8	1.61	1.80	1.97	(0.85, 3.88)
#Rosengart T	6	0	0.00	0.85	0.00	(0.00,100.0)
<b>TOTAL</b>	<b>881</b>	<b>16</b>	<b>1.82</b>	<b>1.73</b>	<b>2.31</b>	<b>(1.32, 3.75)</b>
<b>New York University Medical Center</b>						
#Colvin S	98	4	4.08	2.20	4.09	(1.10,10.46)
Culliford A	343	10	2.92	2.25	2.86	(1.37, 5.26)
Esposito R	313	8	2.56	2.15	2.62	(1.13, 5.16)
#Galloway A	225	5	2.22	2.68	1.83	(0.59, 4.27)
#Glassman L	8	0	0.00	2.05	0.00	(0.00,49.42)
Grossi E	98	4	4.08	3.72	2.42	(0.65, 6.20)
#Ribakove G	214	4	1.87	2.84	1.45	(0.39, 3.71)
All Others	65	2	3.08	4.27	1.59	(0.18, 5.74)
<b>TOTAL</b>	<b>1364</b>	<b>37</b>	<b>2.71</b>	<b>2.59</b>	<b>2.31</b>	<b>(1.63, 3.19)</b>
<b>North Shore University Hospital</b>						
Hall M	779	12	1.54	2.27	1.50	(0.77, 2.61)
#Levy M	449	15	3.34	2.15	3.43	(1.92, 5.65)
Pogo G	698	10	1.43	2.58	1.22	(0.59, 2.25)
##Tortolani A	183	2	1.09	2.98	0.81	(0.09, 2.91)
Vatsia S	308	6	1.95	2.11	2.04	(0.74, 4.44)
All Others	2	0	0.00	11.69	0.00	(0.00,34.59)
<b>TOTAL</b>	<b>2419</b>	<b>45</b>	<b>1.86</b>	<b>2.38</b>	<b>1.72</b>	<b>(1.26, 2.31)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Rochester General Hospital</b>						
Cheeran D	801	11	1.37	2.21	1.37	(0.68, 2.46)
Fong J	203	7	3.45	2.63	2.89	(1.16, 5.96)
Kirshner R	647	14	2.16	3.05	1.56	(0.85, 2.62)
Knight P	738	16	2.17	2.73	1.75	(1.00, 2.84)
Kwan S	478	7	1.46	2.59	1.25	(0.50, 2.57)
<b>TOTAL</b>	<b>2867</b>	<b>55</b>	<b>1.92</b>	<b>2.63</b>	<b>1.61**</b>	<b>(1.21, 2.10)</b>
<b>St. Elizabeth Hospital</b>						
Hatton P	292	3	1.03	1.48	1.53	(0.31, 4.46)
#Joyce F	266	2	0.75	1.37	1.21	(0.14, 4.37)
All Others	117	1	0.85	1.29	1.46	(0.02, 8.11)
<b>TOTAL</b>	<b>675</b>	<b>6</b>	<b>0.89</b>	<b>1.41</b>	<b>1.39</b>	<b>(0.51, 3.04)</b>
<b>St. Francis Hospital</b>						
Bercow N	891	16	1.80	2.16	1.83	(1.05, 2.98)
Colangelo R	458	9	1.97	2.34	1.85	(0.85, 3.52)
Damus P	537	4	0.74	1.47	1.12	(0.30, 2.86)
Durban L	190	3	1.58	3.06	1.14	(0.23, 3.32)
Lamendola C	766	15	1.96	2.52	1.71	(0.96, 2.82)
Robinson N	826	16	1.94	1.76	2.42	(1.39, 3.94)
Taylor J	1043	10	0.96	2.13	0.99**	(0.47, 1.82)
Weisz D	532	5	0.94	2.07	1.00	(0.32, 2.34)
<b>TOTAL</b>	<b>5243</b>	<b>78</b>	<b>1.49</b>	<b>2.11</b>	<b>1.55**</b>	<b>(1.23, 1.94)</b>
<b>St. Joseph's Hospital Health Center</b>						
Marvasti M	568	2	0.35	1.95	0.40**	(0.04, 1.43)
Nast E	578	5	0.87	2.31	0.82**	(0.27, 1.92)
Nazem A	660	3	0.45	2.44	0.41**	(0.08, 1.20)
Rosenberg J	637	11	1.73	2.49	1.53	(0.76, 2.73)
<b>TOTAL</b>	<b>2443</b>	<b>21</b>	<b>0.86</b>	<b>2.31</b>	<b>0.82**</b>	<b>(0.51, 1.25)</b>
<b>St. Luke's Roosevelt Hospital - St. Luke's Div.</b>						
#Aronis M	142	4	2.82	2.05	3.03	(0.81, 7.75)
Connery C	81	4	4.94	2.61	4.16	(1.12, 10.66)
##Geller C	24	1	4.17	2.68	3.43	(0.04, 19.10)
Mindich B	54	1	1.85	2.17	1.88	(0.02, 10.45)
#Stelzer P	5	0	0.00	5.35	0.00	(0.00, 30.25)
Swistel D	469	13	2.77	3.26	1.88	(1.00, 3.21)
All Others	143	7	4.90	2.58	4.18	(1.67, 8.61)
<b>TOTAL</b>	<b>918</b>	<b>30</b>	<b>3.27</b>	<b>2.84</b>	<b>2.54</b>	<b>(1.71, 3.62)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>St. Peter's Hospital</b>						
Banker M	496	13	2.62	1.95	2.96	(1.57, 5.06)
Bennett E	362	3	0.83	1.56	1.17	(0.24, 3.42)
#Dal Col R	472	5	1.06	1.23	1.90	(0.61, 4.44)
#Edwards N	118	1	0.85	1.62	1.15	(0.02, 6.40)
#Sardella G	391	4	1.02	1.52	1.48	(0.40, 3.79)
All Others	22	1	4.55	4.24	2.37	(0.03, 13.16)
<b>TOTAL</b>	<b>1861</b>	<b>27</b>	<b>1.45</b>	<b>1.61</b>	<b>1.99</b>	<b>(1.31, 2.89)</b>
<b>St. Vincent's Hospital and Medical Center</b>						
#Acinapura A	1	0	0.00	0.55	0.00	(0.00, 100.0)
Galdieri R	437	21	4.81	1.80	5.88*	(3.64, 8.99)
##Lang S	91	4	4.40	3.00	3.23	(0.87, 8.28)
McGinn J	552	15	2.72	2.33	2.57	(1.44, 4.24)
Tyras D	470	18	3.83	1.85	4.56*	(2.70, 7.20)
All Others	72	4	5.56	1.61	7.59	(2.04, 19.43)
<b>TOTAL</b>	<b>1623</b>	<b>62</b>	<b>3.82</b>	<b>2.05</b>	<b>4.10*</b>	<b>(3.14, 5.25)</b>
<b>State University Hospital Upstate Medical Center</b>						
Alfieris G	244	6	2.46	2.67	2.03	(0.74, 4.42)
Brandt B	410	4	0.98	2.29	0.94	(0.25, 2.40)
Parker F	232	6	2.59	2.55	2.24	(0.82, 4.87)
Picone A	387	10	2.58	2.30	2.48	(1.19, 4.55)
All Others	234	5	2.14	2.22	2.12	(0.68, 4.95)
<b>TOTAL</b>	<b>1507</b>	<b>31</b>	<b>2.06</b>	<b>2.38</b>	<b>1.90</b>	<b>(1.29, 2.70)</b>
<b>Strong Memorial Hospital</b>						
Hicks G	468	14	2.99	2.42	2.73	(1.49, 4.58)
Risher W	466	11	2.36	2.02	2.58	(1.29, 4.61)
Snider J	146	6	4.11	2.41	3.75	(1.37, 8.17)
<b>TOTAL</b>	<b>1080</b>	<b>31</b>	<b>2.87</b>	<b>2.24</b>	<b>2.82</b>	<b>(1.92, 4.00)</b>
<b>United Health Services - Wilson Division</b>						
McLoughlin D	196	10	5.10	2.23	5.05*	(2.42, 9.29)
#Quintos E	57	1	1.75	2.83	1.37	(0.02, 7.60)
Wong K	352	5	1.42	2.36	1.32	(0.43, 3.09)
Yousuf M	333	13	3.90	2.94	2.92	(1.56, 5.00)
All Others	109	0	0.00	2.18	0.00	(0.00, 3.40)
<b>TOTAL</b>	<b>1047</b>	<b>29</b>	<b>2.77</b>	<b>2.53</b>	<b>2.41</b>	<b>(1.62, 3.47)</b>

Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>University Hospital at Stony Brook</b>						
Bilfinger T	454	11	2.42	2.71	1.97	(0.98, 3.53)
Krukenkamp I	475	12	2.53	1.76	3.17	(1.63, 5.53)
#Levy M	83	1	1.20	2.00	1.33	(0.02, 7.40)
McLarty A	263	4	1.52	1.44	2.33	(0.63, 5.97)
Seifert F	725	12	1.66	1.87	1.95	(1.01, 3.41)
All Others	139	3	2.16	1.67	2.85	(0.57, 8.33)
<b>TOTAL</b>	<b>2139</b>	<b>43</b>	<b>2.01</b>	<b>1.96</b>	<b>2.26</b>	<b>(1.63, 3.04)</b>
<b>University Hospital of Brooklyn</b>						
#Anderson J	160	11	6.88	2.15	7.04*	(3.51, 12.60)
Burack J	194	3	1.55	2.55	1.34	(0.27, 3.91)
#Cunningham J N	1	0	0.00	0.28	0.00	(0.00, 100.0)
##Jacobowitz I	35	3	8.57	1.90	9.96	(2.00, 29.09)
#Ketosugbo A	98	3	3.06	1.64	4.12	(0.83, 12.04)
Piccone V	17	1	5.88	1.68	7.72	(0.10, 42.93)
##Sabado M	23	3	13.04	1.94	14.85*	(2.98, 43.38)
#Zisbrod Z	2	0	0.00	0.83	0.00	(0.00, 100.0)
All Others	118	10	8.47	2.24	8.33*	(3.99,15.31)
<b>TOTAL</b>	<b>648</b>	<b>34</b>	<b>5.25</b>	<b>2.17</b>	<b>5.33*</b>	<b>(3.69, 7.45)</b>
<b>Weill Cornell - NY Presbyterian Hospital</b>						
#Altorki N	92	3	3.26	2.38	3.02	(0.61, 8.81)
Girardi L	338	5	1.48	3.14	1.04	(0.33, 2.42)
#Isom O	207	3	1.45	1.49	2.14	(0.43, 6.26)
#Ko W	95	2	2.11	3.73	1.24	(0.14, 4.49)
Krieger K	707	10	1.41	2.31	1.35	(0.65, 2.48)
##Lang S	102	8	7.84	2.63	6.58*	(2.83,12.96)
#Rosengart T	632	19	3.01	2.87	2.31	(1.39, 3.61)
##Tortolani A	224	5	2.23	2.90	1.70	(0.55, 3.97)
<b>TOTAL</b>	<b>2397</b>	<b>55</b>	<b>2.29</b>	<b>2.63</b>	<b>1.92</b>	<b>(1.45, 2.50)</b>
<b>Westchester Medical Center</b>						
Axelrod H	411	10	2.43	2.64	2.03	(0.97, 3.74)
Fleisher A	474	10	2.11	1.93	2.41	(1.15, 4.43)
Lafaro R	325	13	4.00	2.23	3.95	(2.10, 6.75)
Moggio R	392	8	2.04	2.62	1.72	(0.74, 3.39)
Pooley R	257	16	6.23	2.18	6.29*	(3.59,10.22)
Sarabu M	471	5	1.06	2.59	0.90**	(0.29, 2.11)
Zias E	309	10	3.24	1.99	3.59	(1.72, 6.61)
<b>TOTAL</b>	<b>2639</b>	<b>72</b>	<b>2.73</b>	<b>2.33</b>	<b>2.58</b>	<b>(2.02, 3.25)</b>



Table 3 continued:

	Cases	No of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Winthrop - University Hospital</b>						
Hartman A	427	3	0.70	2.90	0.53**	(0.11, 1.56)
Kofsky E	621	12	1.93	2.78	1.53	(0.79, 2.68)
Mohtashemi M	153	3	1.96	2.40	1.80	(0.36, 5.26)
Schubach S	595	8	1.34	2.19	1.36	(0.58, 2.67)
Scott W	234	4	1.71	2.29	1.65	(0.44, 4.21)
Williams L	83	0	0.00	3.33	0.00	(0.00, 2.92)
All Others	162	3	1.85	3.43	1.19	(0.24, 3.48)
<b>TOTAL</b>	<b>2275</b>	<b>33</b>	<b>1.45</b>	<b>2.64</b>	<b>1.21**</b>	<b>(0.83, 1.70)</b>
<b>Statewide Total</b>	<b>57150</b>	<b>1260</b>	<b>2.20</b>			

\* 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 each patient 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.

**Table 4:** Summary Information for Surgeons Practicing at More than One Hospital, 1997-1999.

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Acinapura A</b>	<b>381</b>	<b>8</b>	<b>2.10</b>	<b>2.20</b>	<b>2.10</b>	<b>(0.91, 4.15)</b>
Maimonides	380	8	2.11	2.20	2.11	(0.91, 4.15)
St. Vincent's	1	0	0.00	0.55	0.00	(0.00, 100.0)
<b>Altorki N</b>	<b>97</b>	<b>3</b>	<b>3.09</b>	<b>2.33</b>	<b>2.93</b>	<b>(0.59, 8.56)</b>
New York Hosp-Queens	5	0	0.00	1.30	0.00	(0.00,100.0)
Weill Cornell	92	3	3.26	2.38	3.02	(0.61, 8.81)
<b>Anderson J</b>	<b>164</b>	<b>11</b>	<b>6.71</b>	<b>2.17</b>	<b>6.82*</b>	<b>(3.40, 12.21)</b>
Maimonides	4	0	0.00	2.76	0.00	(0.00, 73.12)
Univ Hosp-Brooklyn	160	11	6.88	2.15	7.04*	(3.51, 12.60)
<b>Aronis M</b>	<b>183</b>	<b>4</b>	<b>2.19</b>	<b>2.12</b>	<b>2.27</b>	<b>(0.61, 5.81)</b>
New York Hosp-Queens	41	0	0.00	2.36	0.00	(0.00, 8.34)
St. Luke's	142	4	2.82	2.05	3.03	(0.81, 7.75)
<b>Bergsland J</b>	<b>554</b>	<b>19</b>	<b>3.43</b>	<b>2.53</b>	<b>2.99</b>	<b>(1.80, 4.67)</b>
Buffalo General	549	19	3.46	2.51	3.04	(1.83, 4.75)
Millard Fillmore	5	0	0.00	4.83	0.00	(0.00, 33.51)
<b>Brodman R</b>	<b>294</b>	<b>3</b>	<b>1.02</b>	<b>2.20</b>	<b>1.02</b>	<b>(0.21, 2.99)</b>
Montefiore Einstein	1	0	0.00	0.78	0.00	(0.00, 100.0)
Montefiore Moses	293	3	1.02	2.21	1.02	(0.21, 2.99)
<b>Camacho M</b>	<b>202</b>	<b>3</b>	<b>1.49</b>	<b>2.90</b>	<b>1.13</b>	<b>(0.23, 3.30)</b>
Montefiore Einstein	1	0	0.00	0.80	0.00	(0.00,100.0)
Montefiore Moses	201	3	1.49	2.91	1.13	(0.23, 3.30)
<b>Colvin S</b>	<b>112</b>	<b>4</b>	<b>3.57</b>	<b>2.28</b>	<b>3.45</b>	<b>(0.93, 8.84)</b>
Bellevue	14	0	0.00	2.82	0.00	(0.00, 20.47)
NYU Hosp Ctr	98	4	4.08	2.20	4.09	(1.10, 10.46)
<b>Connolly M</b>	<b>733</b>	<b>14</b>	<b>1.91</b>	<b>2.25</b>	<b>1.88</b>	<b>(1.02, 3.15)</b>
Lenox Hill	233	5	2.15	2.12	2.23	(0.72, 5.21)
Maimonides	500	9	1.80	2.31	1.72	(0.79, 3.27)
<b>Crooke G</b>	<b>25</b>	<b>0</b>	<b>0.00</b>	<b>2.01</b>	<b>0.00</b>	<b>(0.00, 16.08)</b>
Montefiore Einstein	2	0	0.00	1.41	0.00	(0.00, 100.0)
Montefiore Moses	23	0	0.00	2.06	0.00	(0.00, 17.04)
<b>Cunningham J N</b>	<b>306</b>	<b>18</b>	<b>5.88</b>	<b>2.80</b>	<b>4.63*</b>	<b>(2.74, 7.32)</b>
Maimonides	305	18	5.90	2.81	4.63*	(2.74, 7.32)
Univ Hosp-Brooklyn	1	0	0.00	0.28	0.00	(0.00, 100.0)
<b>Dal Col R</b>	<b>473</b>	<b>5</b>	<b>1.06</b>	<b>1.23</b>	<b>1.90</b>	<b>(0.61, 4.43)</b>
Ellis Hospital	1	0	0.00	0.41	0.00	(0.00, 100.0)
St. Peter's Hospital	472	5	1.06	1.23	1.90	(0.61, 4.44)

Table 4 continued:

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Edwards N</b>	<b>388</b>	<b>9</b>	<b>2.32</b>	<b>2.08</b>	<b>2.46</b>	<b>(1.12, 4.67)</b>
Columbia Presbyterian	270	8	2.96	2.28	2.87	(1.24, 5.65)
St. Peter's Hospital	118	1	0.85	1.62	1.15	(0.02, 6.40)
<b>Frymus M</b>	<b>415</b>	<b>12</b>	<b>2.89</b>	<b>1.99</b>	<b>3.20</b>	<b>(1.65, 5.59)</b>
Montefiore Einstein	414	11	2.66	1.99	2.94	(1.46, 5.26)
Montefiore Moses	1	1	100.00	0.56	100.00*	(5.11, 100.0)
<b>Galloway A</b>	<b>248</b>	<b>6</b>	<b>2.42</b>	<b>2.52</b>	<b>2.12</b>	<b>(0.77, 4.61)</b>
Bellevue	23	1	4.35	0.98	9.79	(0.13, 54.48)
NYU Hosp Ctr	225	5	2.22	2.68	1.83	(0.59, 4.27)
<b>Geller C</b>	<b>107</b>	<b>4</b>	<b>3.74</b>	<b>1.90</b>	<b>4.35</b>	<b>(1.17, 11.13)</b>
Beth Israel	11	0	0.00	1.64	0.00	(0.00, 44.93)
Lenox Hill	72	3	4.17	1.68	5.48	(1.10, 16.02)
St. Luke's	24	1	4.17	2.68	3.43	(0.04, 19.10)
<b>Genovesi M</b>	<b>166</b>	<b>7</b>	<b>4.22</b>	<b>2.67</b>	<b>3.48</b>	<b>(1.39, 7.17)</b>
Lenox Hill	47	2	4.26	2.12	4.42	(0.50, 15.96)
Maimonides	119	5	4.20	2.89	3.21	(1.03, 7.49)
<b>Glassman L</b>	<b>97</b>	<b>3</b>	<b>3.09</b>	<b>1.75</b>	<b>3.90</b>	<b>(0.78, 11.41)</b>
Bellevue	89	3	3.37	1.72	4.32	(0.87, 12.63)
NYU Hosp Ctr	8	0	0.00	2.05	0.00	(0.00, 49.42)
<b>Gold J</b>	<b>186</b>	<b>0</b>	<b>0.00</b>	<b>1.69</b>	<b>0.00</b>	<b>(0.00, 2.57)</b>
Montefiore Einstein	34	0	0.00	1.55	0.00	(0.00, 15.34)
Montefiore Moses	152	0	0.00	1.72	0.00	(0.00, 3.09)
<b>Guarino R</b>	<b>479</b>	<b>8</b>	<b>1.67</b>	<b>1.59</b>	<b>2.32</b>	<b>(1.00, 4.57)</b>
Buffalo General	2	0	0.00	0.94	0.00	(0.00, 100.0)
Erie County	4	0	0.00	1.07	0.00	(0.00, 100.0)
Millard Fillmore	473	8	1.69	1.60	2.34	(1.01, 4.60)
<b>Isom O</b>	<b>209</b>	<b>3</b>	<b>1.44</b>	<b>1.53</b>	<b>2.07</b>	<b>(0.42, 6.05)</b>
New York Hosp-Queens	2	0	0.00	5.54	0.00	(0.00, 72.93)
Weill Cornell	207	3	1.45	1.49	2.14	(0.43, 6.26)
<b>Jacobowitz I</b>	<b>1040</b>	<b>32</b>	<b>3.08</b>	<b>2.88</b>	<b>2.36</b>	<b>(1.61, 3.33)</b>
Lenox Hill	360	10	2.78	2.54	2.41	(1.16, 4.44)
Maimonides	645	19	2.95	3.12	2.08	(1.25, 3.25)
Univ Hosp-Brooklyn	35	3	8.57	1.90	9.96	(2.00, 29.09)
<b>Joyce F</b>	<b>348</b>	<b>4</b>	<b>1.15</b>	<b>1.36</b>	<b>1.86</b>	<b>(0.50, 4.77)</b>
Albany Med Ctr	82	2	2.44	1.34	4.02	(0.45, 14.53)
St. Elizabeth	266	2	0.75	1.37	1.21	(0.14, 4.37)

<b>Kerr P</b>	<b>222</b>	<b>9</b>	<b>4.05</b>	<b>2.21</b>	<b>4.05</b>	<b>(1.85, 7.69)</b>
Buffalo General	2	0	0.00	1.67	0.00	(0.00, 100.0)
Erie County	1	0	0.00	4.72	0.00	(0.00, 100.0)
Millard Fillmore	219	9	4.11	2.20	4.12	(1.88, 7.82)
<b>Ketosugbo A</b>	<b>128</b>	<b>4</b>	<b>3.13</b>	<b>1.80</b>	<b>3.82</b>	<b>(1.03, 9.79)</b>
Maimonides	30	1	3.33	2.34	3.14	(0.04, 17.50)
Univ Hosp-Brooklyn	98	3	3.06	1.64	4.12	(0.83, 12.04)
<b>Ko W</b>	<b>424</b>	<b>10</b>	<b>2.36</b>	<b>2.04</b>	<b>2.55</b>	<b>(1.22, 4.69)</b>
New York Hosp-Queens	329	8	2.43	1.55	3.46	(1.49, 6.81)
Weill Cornell	95	2	2.11	3.73	1.24	(0.14, 4.49)
<b>Lang S</b>	<b>691</b>	<b>20</b>	<b>2.89</b>	<b>2.08</b>	<b>3.07</b>	<b>(1.87, 4.74)</b>
New York Hosp-Queens	498	8	1.61	1.80	1.97	(0.85, 3.88)
St. Vincent's	91	4	4.40	3.00	3.23	(0.87, 8.28)
Weill Cornell	102	8	7.84	2.63	6.58*	(2.83, 12.96)
<b>Levy M</b>	<b>532</b>	<b>16</b>	<b>3.01</b>	<b>2.13</b>	<b>3.12</b>	<b>(1.78, 5.07)</b>
North Shore	449	15	3.34	2.15	3.43	(1.92, 5.65)
Univ Hosp Stony Brook	83	1	1.20	2.00	1.33	(0.02, 7.40)
<b>Quintos E</b>	<b>279</b>	<b>13</b>	<b>4.66</b>	<b>2.10</b>	<b>4.88*</b>	<b>(2.60, 8.35)</b>
Arnot-Ogden	222	12	5.41	1.92	6.22*	(3.21, 10.86)
United Health Serv	57	1	1.75	2.83	1.37	(0.02, 7.60)
<b>Raza S</b>	<b>367</b>	<b>17</b>	<b>4.63</b>	<b>1.84</b>	<b>5.55*</b>	<b>(3.23, 8.88)</b>
Buffalo General	366	17	4.64	1.84	5.56*	(3.24, 8.91)
Millard Fillmore	1	0	0.00	1.89	0.00	(0.00, 100.0)
<b>Ribakove G</b>	<b>271</b>	<b>7</b>	<b>2.58</b>	<b>2.58</b>	<b>2.21</b>	<b>(0.88, 4.55)</b>
Bellevue	57	3	5.26	1.60	7.27	(1.46, 21.25)
NYU Hosp Ctr	214	4	1.87	2.84	1.45	(0.39, 3.71)
<b>Rosengart T</b>	<b>638</b>	<b>19</b>	<b>2.98</b>	<b>2.85</b>	<b>2.31</b>	<b>(1.39, 3.60)</b>
New York Hosp-Queens	6	0	0.00	0.85	0.00	(0.00, 100.0)
Weill Cornell	632	19	3.01	2.87	2.31	(1.39, 3.61)
<b>Sabado M</b>	<b>215</b>	<b>13</b>	<b>6.05</b>	<b>3.03</b>	<b>4.41*</b>	<b>(2.34, 7.53)</b>
Lenox Hill	146	7	4.79	3.18	3.33	(1.33, 6.86)
Maimonides	46	3	6.52	3.10	4.64	(0.93, 13.56)
Univ Hosp-Brooklyn	23	3	13.04	1.94	14.85*	(2.98, 43.38)
<b>Sardella G</b>	<b>497</b>	<b>4</b>	<b>0.80</b>	<b>1.47</b>	<b>1.21</b>	<b>(0.32, 3.09)</b>
Albany Med Ctr	106	0	0.00	1.27	0.00	(0.00, 6.00)
St. Peter's Hospital	391	4	1.02	1.52	1.48	(0.40, 3.79)
<b>Stelzer P</b>	<b>211</b>	<b>6</b>	<b>2.84</b>	<b>2.40</b>	<b>2.61</b>	<b>(0.95, 5.69)</b>
Beth Israel	206	6	2.91	2.33	2.76	(1.01, 6.00)
St. Luke's	5	0	0.00	5.35	0.00	(0.00, 30.25)

Table 4 continued:

	Cases	No. of Deaths	OMR	EMR	RAMR	95% CI for RAMR
<b>Tortolani A</b>	<b>470</b>	<b>9</b>	<b>1.91</b>	<b>2.79</b>	<b>1.52</b>	<b>(0.69, 2.88)</b>
Montefiore Einstein	63	2	3.17	1.82	3.85	(0.43, 13.89)
North Shore	183	2	1.09	2.98	0.81	(0.09, 2.91)
Weill Cornell	224	5	2.23	2.90	1.70	(0.55, 3.97)
<b>Zisbrod Z</b>	<b>642</b>	<b>15</b>	<b>2.34</b>	<b>2.50</b>	<b>2.06</b>	<b>(1.15, 3.40)</b>
Maimonides	640	15	2.34	2.50	2.07	(1.16, 3.41)
Univ Hosp Brooklyn	2	0	0.00	0.83	0.00	(0.00, 100.0)

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

\*\* Risk-adjusted mortality 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 each patient 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.

# SURGEON AND HOSPITAL VOLUMES FOR ADULT CARDIAC SURGERY AND FOR ISOLATED CABG SURGERY (1997-1999)

Table 5 presents, for each hospital and for each surgeon performing at least 200 isolated CABG operations at that hospital in 1997-1999 and/or performing one or more isolated CABG operations in each of the years 1997-1999, 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 not meeting the above criteria 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 1997-1999 was 70.24 percent (57,151 CABG operations out of a total of 81,362 total adult cardiac surgeries).

**Table 5:** Total Cardiac Surgery and Isolated CABG Surgery Volumes by Hospital and Surgeon, 1997-1999.

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>Albany Medical Center Hospital</b>			
Britton L	535	362	67.66
Canavan T	581	480	82.62
Joyce F	104	82	78.85
Kelley J	800	577	72.13
Miller S	570	434	76.14
Sardella G	113	106	93.81
All Others	749	527	70.36
<b>TOTAL</b>	<b>3452</b>	<b>2568</b>	<b>74.39</b>
<b>Arnot-Ogden Memorial Hospital</b>			
Quintos E	258	222	86.05
All Others	119	100	84.03
<b>TOTAL</b>	<b>377</b>	<b>322</b>	<b>85.41</b>
<b>Bellevue Hospital Center</b>			
Colvin S	54	14	25.93
Galloway A	59	23	38.98
Glassman L	113	89	78.76
Ribakove G	132	57	43.18
All Others	97	44	45.36
<b>TOTAL</b>	<b>455</b>	<b>227</b>	<b>49.89</b>

Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>Beth Israel Medical Center</b>			
Geller C	13	11	84.62
Harris L	280	204	72.86
Hoffman D	334	272	81.44
Stelzer P	536	206	38.43
Tranbaugh R	817	578	70.75
<b>TOTAL</b>	<b>1980</b>	<b>1271</b>	<b>64.19</b>
<b>Buffalo General Hospital</b>			
Bergsland J	622	549	88.26
Bhayana J	532	221	41.54
Grosner G	761	679	89.22
Guarino R	2	2	100.00
Kerr P	6	2	33.33
Lajos T	387	351	90.70
Levinsky L	427	413	96.72
Lewin A	524	503	95.99
Raza S	484	366	75.62
Salerno T	291	207	71.13
All Others	90	48	53.33
<b>TOTAL</b>	<b>4126</b>	<b>3341</b>	<b>80.97</b>
<b>Columbia Presbyterian - NY Presbyterian Hospital</b>			
Edwards N	444	270	60.81
Oz M	1132	644	56.89
Rose E	436	223	51.15
Smith C	1021	564	55.24
All Others	558	153	27.42
<b>TOTAL</b>	<b>3591</b>	<b>1854</b>	<b>51.63</b>
<b>Ellis Hospital</b>			
Dal Col R	1	1	100.00
Depan H	641	384	59.91
Reich H	440	393	89.32
Saifi J	626	480	76.68
All Others	225	179	79.56
<b>TOTAL</b>	<b>1933</b>	<b>1437</b>	<b>74.34</b>
<b>Erie County Medical Center</b>			
Bell-Thomson J	308	241	78.25
Datta S	159	153	96.23
Guarino R	4	4	100.00
Kerr P	1	1	100.00
All Others	143	105	73.43
<b>TOTAL</b>	<b>615</b>	<b>504</b>	<b>81.95</b>

Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>Lenox Hill Hospital</b>			
Connolly M	365	233	63.84
Geller C	84	72	85.71
Genovesi M	58	47	81.03
Jacobowitz I	465	360	77.42
McCabe J	79	52	65.82
Sabado M	257	146	56.81
Subramanian V	1284	1044	81.31
All Others	19	16	84.21
<b>TOTAL</b>	<b>2611</b>	<b>1970</b>	<b>75.45</b>
<b>Long Island Jewish Medical Center</b>			
Graver L	887	619	69.79
Kline G	154	119	77.27
Palazzo R	571	458	80.21
All Others	5	0	0.00
<b>TOTAL</b>	<b>1617</b>	<b>1196</b>	<b>73.96</b>
<b>Maimonides Medical Center</b>			
Acinapura A	480	380	79.17
Anderson J	6	4	66.67
Connolly M	621	500	80.52
Cunningham J N	437	305	69.79
Genovesi M	131	119	90.84
Jacobowitz I	820	645	78.66
Ketosugbo A	34	30	88.24
Sabado M	64	46	71.88
Zisbrod Z	738	640	86.72
All Others	131	114	87.02
<b>TOTAL</b>	<b>3462</b>	<b>2783</b>	<b>80.39</b>
<b>Millard Fillmore Hospital</b>			
Aldridge J	420	336	80.00
Ashraf M	748	633	84.63
Bergsland J	5	5	100.00
Guarino R	528	473	89.58
Jennings L	456	413	90.57
Kerr P	275	219	79.64
Raza S	1	1	100.00
All Others	165	140	84.85
<b>TOTAL</b>	<b>2598</b>	<b>2220</b>	<b>85.45</b>



Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>Montefiore Medical Center - Einstein Division</b>			
Brodman R	2	1	50.00
Camacho M	3	1	33.33
Crooke G	2	2	100.00
Frater R	184	87	47.28
Frymus M	502	414	82.47
Gold J	56	34	60.71
Tortolani A	88	63	71.59
All Others	418	291	69.62
<b>TOTAL</b>	<b>1255</b>	<b>893</b>	<b>71.16</b>
<b>Montefiore Medical Center - Moses Division</b>			
Attai L	427	317	74.24
Brodman R	420	293	69.76
Camacho M	288	201	69.79
Crooke G	36	23	63.89
Frymus M	1	1	100.00
Gold J	237	152	64.14
Merav A	322	245	76.09
All Others	16	10	62.50
<b>TOTAL</b>	<b>1747</b>	<b>1242</b>	<b>71.09</b>
<b>Mount Sinai Hospital</b>			
Ergin M	647	342	52.86
Galla J	482	242	50.21
Griepp R	375	28	7.47
Lansman S	558	320	57.35
McCullough J	362	241	66.57
Nguyen K	162	91	56.17
All Others	79	32	40.51
<b>TOTAL</b>	<b>2665</b>	<b>1296</b>	<b>48.63</b>
<b>New York Hospital - Queens</b>			
Altorki N	6	5	83.33
Aronis M	61	41	67.21
Isom O	2	2	100.00
Ko W	417	329	78.90
Lang S	652	498	76.38
Rosengart T	8	6	75.00
<b>TOTAL</b>	<b>1146</b>	<b>881</b>	<b>76.88</b>

Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>NYU Hospitals Medical Center</b>			
Colvin S	638	98	15.36
Culliford A	629	343	54.53
Esposito R	466	313	67.17
Galloway A	510	225	44.12
Glassman L	28	8	28.57
Grossi E	220	98	44.55
Ribakove G	364	214	58.79
All Others	157	65	41.40
<b>TOTAL</b>	<b>3012</b>	<b>1364</b>	<b>45.29</b>
<b>North Shore University Hospital</b>			
Hall M	1209	779	64.43
Levy M	606	449	74.09
Pogo G	958	698	72.86
Tortolani A	224	183	81.70
Vatsia S	489	308	62.99
All Others	21	2	9.52
<b>TOTAL</b>	<b>3507</b>	<b>2419</b>	<b>68.98</b>
<b>Rochester General Hospital</b>			
Cheeran D	1028	801	77.92
Fong J	224	203	90.63
Kirshner R	805	647	80.37
Knight P	1130	738	65.31
Kwan S	577	478	82.84
<b>TOTAL</b>	<b>3764</b>	<b>2867</b>	<b>76.17</b>
<b>St. Elizabeth Hospital</b>			
Hatton P	395	292	73.92
Joyce F	352	266	75.57
All Others	147	117	79.59
<b>TOTAL</b>	<b>894</b>	<b>675</b>	<b>75.50</b>
<b>St. Francis Hospital</b>			
Bercow N	1211	891	73.58
Colangelo R	589	458	77.76
Damus P	1121	537	47.90
Durban L	264	190	71.97
Lamendola C	1034	766	74.08
Robinson N	1196	826	69.06
Taylor J	1402	1043	74.39
Weisz D	675	532	78.81
<b>TOTAL</b>	<b>7492</b>	<b>5243</b>	<b>69.98</b>

Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>St. Joseph's Hospital Health Center</b>			
Marvasti M	787	568	72.17
Nast E	719	578	80.39
Nazem A	822	660	80.29
Rosenberg J	1004	637	63.45
<b>TOTAL</b>	<b>3332</b>	<b>2443</b>	<b>73.32</b>
<b>St. Luke's Roosevelt Hospital - St. Luke's Div.</b>			
Aronis M	204	142	69.61
Connery C	122	81	66.39
Geller C	51	24	47.06
Mindich B	78	54	69.23
Stelzer P	53	5	9.43
Swistel D	585	469	80.17
All Others	248	143	57.66
<b>TOTAL</b>	<b>1341</b>	<b>918</b>	<b>68.46</b>
<b>St. Peter's Hospital</b>			
Banker M	593	496	83.64
Bennett E	649	362	55.78
Dal Col R	689	472	68.51
Edwards N	150	118	78.67
Sardella G	478	391	81.80
All Others	32	22	68.75
<b>TOTAL</b>	<b>2591</b>	<b>1861</b>	<b>71.83</b>
<b>St. Vincent's Hospital and Medical Center</b>			
Acinapura A	1	1	100.00
Galdieri R	545	437	80.18
Lang S	115	91	79.13
McGinn J	712	552	77.53
Tyras D	596	470	78.86
All Others	96	72	75.00
<b>TOTAL</b>	<b>2065</b>	<b>1623</b>	<b>78.60</b>
<b>State University Hospital Upstate Medical Center</b>			
Alfieris G	454	244	53.74
Brandt B	525	410	78.10
Parker F	353	232	65.72
Picone A	515	387	75.15
All Others	293	234	79.86
<b>TOTAL</b>	<b>2140</b>	<b>1507</b>	<b>70.42</b>

Table 5 continued:

	<b>Total Cardiac Surgery</b>	<b>Isolated CABG</b>	<b>% Isolated CABG</b>
<b>Strong Memorial Hospital</b>			
Hicks G	753	468	62.15
Risher W	859	466	54.25
Snider J	182	146	80.22
All Others	31	0	0.00
<b>TOTAL</b>	<b>1825</b>	<b>1080</b>	<b>59.18</b>
<b>United Health Services - Wilson Division</b>			
McLoughlin D	230	196	85.22
Quintos E	66	57	86.36
Wong K	470	352	74.89
Yousuf M	467	333	71.31
All Others	140	109	77.86
<b>TOTAL</b>	<b>1373</b>	<b>1047</b>	<b>76.26</b>
<b>University Hospital at Stony Brook</b>			
Bilfinger T	553	454	82.10
Krukenkamp I	607	475	78.25
Levy M	91	83	91.21
McLarty A	299	263	87.96
Seifert F	896	725	80.92
All Others	156	139	89.10
<b>TOTAL</b>	<b>2602</b>	<b>2139</b>	<b>82.21</b>
<b>University Hospital of Brooklyn</b>			
Anderson J	279	160	57.35
Burack J	249	194	77.91
Cunningham J N	3	1	33.33
Jacobowitz I	47	35	74.47
Ketosugbo A	117	98	83.76
Piccone V	24	17	70.83
Sabado M	30	23	76.67
Zisbrod Z	3	2	66.67
All Others	179	118	65.92
<b>TOTAL</b>	<b>931</b>	<b>648</b>	<b>69.60</b>

Table 5 continued:

	Total Cardiac Surgery	Isolated CABG	% Isolated CABG
<b>Weill Cornell - NY Presbyterian Hospital</b>			
Altorki N	110	92	83.64
Girardi L	716	338	47.21
Isom O	512	207	40.43
Ko W	186	95	51.08
Krieger K	1063	707	66.51
Lang S	173	102	58.96
Rosengart T	970	632	65.15
Tortolani A	282	224	79.43
All Others	24	0	0.00
<b>TOTAL</b>	<b>4036</b>	<b>2397</b>	<b>59.39</b>
<b>Westchester Medical Center</b>			
Axelrod H	512	411	80.27
Fleisher A	621	474	76.33
Lafaro R	491	325	66.19
Moggio R	552	392	71.01
Pooley R	329	257	78.12
Sarabu M	700	471	67.29
Zias E	372	309	83.06
All Others	4	0	0.00
<b>TOTAL</b>	<b>3581</b>	<b>2639</b>	<b>73.69</b>
<b>Winthrop - University Hospital</b>			
Hartman A	809	427	52.78
Kofsky E	776	621	80.03
Mohtashemi M	198	153	77.27
Schubach S	828	595	71.86
Scott W	331	234	70.69
Williams L	103	83	80.58
All Others	201	162	80.60
<b>TOTAL</b>	<b>3246</b>	<b>2275</b>	<b>70.09</b>
<b>Statewide Total</b>	<b>81362</b>	<b>57150</b>	<b>70.24</b>

# Criteria Used in Reporting Significant Risk Factors (1999)

## Based on Documentation in Medical Record

Patient Risk Factor	Definitions
<b>Hemodynamic State</b>	Determined just prior to surgery.
<ul style="list-style-type: none"> <li>• Unstable</li> <li>• Shock</li> <li>• CPR</li> </ul>	<p>Patient requires pharmacologic or mechanical support to maintain blood pressure.</p> <p>Acute hypotension (systolic blood pressure &lt; 80 mmHg) or low cardiac index (&lt; 2.0 liters/min/m<sup>2</sup>), despite pharmacologic or mechanical support.</p> <p>Patient requires cardiopulmonary resuscitation within one hour of the procedure.</p>
<b>Comorbidities</b>	
<ul style="list-style-type: none"> <li>• Diabetes Requiring Medication</li> <li>• Extensively Calcified Aorta</li> <li>• Hepatic Failure</li> <li>• Renal Failure, Dialysis</li> </ul>	<p>The patient is receiving either oral hypoglycemics or insulin.</p> <p>More than the usual amount (for age) of calcification or plaque formation in the ascending aorta, or plaque, palpable at surgery, in the ascending aorta.</p> <p>The patient has cirrhosis or other liver disease and has a bilirubin &gt; 2 mg/dl and a serum albumin &lt; 3.5 g/dl.</p> <p>The patient is on chronic peritoneal or hemodialysis</p>
<b>Severity of Atherosclerotic Process</b>	
<ul style="list-style-type: none"> <li>• Aortoiliac Disease</li> <li>• Carotid/Cerebrovascular Disease</li> </ul>	<p>Angiographic demonstration of at least 50% narrowing in a major aortoiliac vessel, previous surgery for such disease, absent femoral pulses, or the inability to insert a catheter or intra-aortic balloon due to iliac aneurysm or obstruction of the aortoiliac arteries.</p> <p>Angiographic or ultrasound demonstration of at least 50% narrowing in a major cerebral or carotid artery (common or internal), history of a non-embolic stroke, or previous surgery for such disease. A history of bruits or transient ischemic attacks (TIA) is not sufficient evidence of carotid/cerebrovascular disease.</p>
<b>Ventricular Function</b>	
<ul style="list-style-type: none"> <li>• Ejection Fraction</li> </ul>	<p>Value of the ejection fraction taken closest to the procedure. When a calculated measure is unavailable, the EF should be estimated visually from the ventriculogram or by echocardiography. Intraoperative direct observation of the heart is not an adequate basis for a visual estimate of the ejection fraction.</p>
<b>Previous Open Heart Operations</b>	<p>Open heart surgery previous to the hospitalization. For the purpose of this reporting system, minimally invasive procedures are considered open heart surgery.</p>

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## MEDICAL TERMINOLOGY

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**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) or percutaneous coronary intervention (PCI). 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; none of these which can 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.

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 poor stress management.

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

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## NEW YORK STATE CARDIAC SURGERY CENTERS

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

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

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

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

Buffalo General Hospital  
100 High Street  
Buffalo, New York 14203

Columbia Presbyterian Medical Center  
– NY Presbyterian  
161 Fort Washington Avenue  
New York, New York 10032

Ellis Hospital  
1101 Nott Street  
Schenectady, New York 12308

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

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

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

Maimonides Medical Center  
4802 Tenth Avenue  
Brooklyn, New York 11219

Millard Fillmore Hospital  
3 Gates Circle  
Buffalo, New York 14209

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

Montefiore Medical Center-  
Weiler Hospital of  
A Einstein College  
1825 Eastchester Road  
Bronx, New York 10461

Mount Sinai Medical Center  
One Gustave L. Levy Place  
New York, New York 10019

NYU Hospitals Center  
550 First Avenue  
New York, New York 10016

New York Hospital Medical  
Center-Queens  
56-45 Main Street  
Flushing, New York 11355

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

Rochester General Hospital  
1425 Portland Avenue  
Rochester, New York 14621

St. Elizabeth Medical Center  
2209 Genesee Street  
Utica, New York 13413

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

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

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

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

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

Strong Memorial Hospital  
601 Elmwood Avenue  
Rochester, New York 14642

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

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

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

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

Weill-Cornell Medical Center –  
NY Presbyterian  
525 East 68th Street  
New York, New York 10021

Westchester Medical Center  
Grasslands Road  
Valhalla, New York 10595

Winthrop – University Hospital  
259 First Street  
Mineola, New York 11501







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or by writing to:

Cardiac  
Box 2000  
New York State Department of Health  
Albany, New York 12220







State of New York  
George E. Pataki, Governor

Department of Health  
Antonia C. Novello, M.D., M.P.H., Dr.P.H., Commissioner