APPENDICES

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
1. Date of Surgery	MM–dd–yy.	
2. Gender	Male, female.	
3. Date of Birth	MM–dd–yy.	
4. Race/Ethnicity	Caucasian, Black, Hispanic, Asian, Native American, or other.	
5. Insurer–Payment Source	Primary payer: Medicare, Medicaid, private/corporate, CHAMPUS, or uninsured.	
6. Patient's Zip Code		
7. Height	Centimeters.	
8. Weight	Kilograms.	
9. Pre–operative Creatinine Level	mg/dl. Serum creatinine at time of surgery	The STS form asks for the "highest creatinine" while the *STS Terms and Definitions* guide asks for the most recent pre–operative creatinine. Please follow the guide, i.e., code the most recent pre–operative value. Note also that beginning 1/1/99, the STS will collect this data element for all cases.
10. Hypertension	Blood pressure exceeding 140/90 mm Hg or a history of high blood pressure, or the need for anti–hypertensive medications.	Beginning 1/1/99, the STS proposes to change this definition to: 1. Documented history of HTN diagnosed and treated with medication, diet and/or exercise. 2. BP $\geq$140/90 on 2 occasions. 3. Normotensive but currently on antihypertensive medication.
11. Dialysis	Hemodialysis or peritoneal dialysis.	Check this box if the patient is *currently* on dialysis, not if the patient has ever been on dialysis. This is consistent with the proposed STS definition.
12. Diabetes	A history of diabetes, regardless of duration of disease or need for anti–diabetic agents.	Note that this is a very liberal definition of diabetes.

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
13. Peripheral Vascular Disease	A history of aneurysm and/or occlusive vascular disease with or without previous extra–cardiac vascular surgery.	As of 1/1/99, the STS proposes to change this definition to: "The patient has PVD, as indicated by any or all of: claudication either with exertion or rest; amputation for arterial insufficiency; aorto–iliac occlusive disease reconstruction; peripheral vascular bypass surgery, angioplasty, stent documented AAA, AAA repair or stent; documented positive non–invasive testing." Cerebrovascular disease is not included in peripheral vascular disease, since it has its own data element.
14. Cerebrovascular Disease	Any TIA, RIND (Reversable Ischemic Neurologic Deficit), CVA, or history of cerebrovascular surgery.	As of 1/1/99, the STS proposes to change this definition to: "The patient has a documented history of: CVA (symptoms > 72 hrs after onset); RIND (recovery with 72 hrs); TIA (return within 24 hrs); unresponsive coma > 24 hrs; non–invasive carotid test with > 75% occlusion."
15. Ventricular Arrhythmia	Abnormal rapid ventricular rhythm causing hemodynamic collapse (tachycardia) or diffuse chaotic ventricular depolarization unable to produce an effective blood pressure.	Ventricular arrhythmia does NOT refer to frequent PVC's (premature ventricular beats), bigeminy, or non–sustained ventricular tachycardia. Note that as of 1/1/99, the STS proposes to change this definition to: "Within two weeks of the procedure, clinical documentation of sustained VT or VF requiring cardioversion and/or IV antiarrhythmics."
16. Myocardial Infarction	A patient is considered to have had a myocardial infarction if there is documented evidence of a transmural infarction defined by the appearance of a new Q wave in two or more contiguous leads on ECG, or subendo–cardial infarction (non Q wave), which is considered present in a patient having clinical, angiographic, electro–cardiographic, and/or laboratory isoenzyme evidence of myocardial necrosis with an ECG showing no new Q waves.	Check this box if the patient has ever had an MI. For STS users, we will collect the data element "MI and not the element "MI Type." Note that as of 1/1/99, the STS proposes to change this definition to: 1. "Patient hospitalized for an MI documented in the medical record. 2. Two of four criteria are necessary: prolonged (> 20 min) "typical" chest pain not relieved by rest and/or nitrates; enzyme level elevation; CK–MB > 5% or total CPK CK greater than 2x normal; LDH subtype 1 > LCH subtype 2; troponin > 0.2 ug/ml; new wall motion abnormalities; ; serial ECG (at least two) showing changes from baseline or serially in ST–T and/or Q waves that are 0.03 seconds in width and/or > or + one third of the total QRS complex in two or more contiguous leads."
17. Date/Time of Most Recent MI	STS data element "MI When: < 6 hrs., < 24 hrs., 1–7 days, 7–21 days, >21 days" refers to the last documented infarction.	For STS users, we will collect the variable "MI When." For users of CCMRP , we will collect date of MI and calculate the interval from MI to surgery.

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Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
18. Number of Prior Cardiac Operations Requiring Cardiopulmonary Bypass	Prior to this operation being recorded, which may be during this admission, how many cardiac surgical operations were performed on this patient utilizing cardiopulmonary bypass.	Note that we do not code re–dos on the same admission separately. In addition, we may update this definition later to reflect "minimally invasive" procedures done "off–pump."
19. Date of Most Recent Cardiac Operation	This is the definition for the STS variable "Date of most recent CV intervention": Date patient having undergone any previous cardiac procedure, which may be during current admission. For STS users, either record the date of the most recent cardiac operation in this field or, if you have added a customized field for this data element, record it there.	Enter the date of the most recent cardiac operation (CABG, valve surgery, intracardiac repair) Do *not* record the date of the prior PTCA's, non–cardiac vascular surgeries, pacemaker or defibrillator implantations, or other interventions. Note that there is some ambiguity on the STS data collection form, which asks for "Previous CV intervention: most recent" while the STS Terms and Definitions makes it clearer that cardiac procedures, and not vascular procedures, are the real target. In addition, the STS form makes it difficult to tell whether the most recent CV intervention was a bypass, a PTCA, or some other procedure since one can "check off" more than one box, and the date of the last catherterization is captured under "Catheterization Data."
20. Number of Prior PTCAs	Total number of previous PTCA/ Atherectomy procedures prior to the cardiac surgical procedure.	The number of PTCA's refers to the number of separate procedures (including any performed during the current hospitalization), NOT the number of vessels dilated.
21. PTCA/Atherectomy during Same Admission as Surgery	Was the interventional cardiologic procedure performed during the same in–patient admission as the current operation? Yes/No.	
22. PTCA to Surgery Time Interval	<6 hrs., >6 hrs.	If PTCA occurred during this admission. Note beginning 1/1/99, the STS proposes to rename this data element "Unplanned CABG" and to collect the date and time of the last intervention, and date and time of the last surgical intervention.

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
23. Chronic Obstructive Pulmonary Disease	A patient who requires pharmacologic therapy for the treatment of chronic pulmonary compromise, or a patient who has a FEV1 < 75% of predicted value.	After 1/1/99, the STS proposes to change the name of this data element to "Chronic Lung Disease," and to replace the existing definition with: "Patient with clinical documentation of any of the following: pharmacologic Rx (inhalers, theophylline/aminophylline, steroids); FEV1 < 75%; RA pO2 < 60; RA pCO2 > 50." Patients do NOT have COPD merely on the basis on a heavy smoking history or being labeled "COPD" in the chart without other documentation.
24. Congestive Heart Failure	At least three of the following: 1) presence of dyspnea; 2) rales thought to represent pulmonar congestion; 3) peripheral edema; 4) cardiomegaly on chest x–ray; 5) chest x–ray compatible with interstitial edema.	Note that as of 1/1/99, the STS proposes to change this definition to: 1. "Within 2 weeks prior to procedure. Physician Dx of CHF is made. 2. Within 2 weeks prior to procedure, one or more are present: PND; dyspnea on exertion due to heart failure; pulmonary congestion on CXR. 3. Pedal edema or dyspnea alone are not diagnostic. 4. Pt should have received diuretics or digoxin." Note also that NYHA function class (below) refers only to the severity of the patient's heart failure at the time of surgery, and not to the severity of heart failure in the past.
25. Angina	Yes/No.	Check this box if the patient has ever had angina.
26. Unstable Angina	Stable: Angina which is controlled by oral or transcutaneous medication. Unstable: The presence of on–going refractory ischemia that requires hospitalization in an intensive care unit and use of intravenous nitrate therapy for control.	The current STS definition of unstable angina requires hospitalization in an ICU and treatment with intravenous nitroglycerin. However, beginning 1/1/99, the STS proposes to replace this with "Angina at rest (>20 min); or new onset (<2 months); or CCS Class III angina; or recent acceleration in pattern and increase of one CCS Class to CCS III; or variant angina; or non–Q MI; or post–infarction angina (>24 hrs); or 'Clinical Classification' (IV nitrates (or equivalent), IV heparin (or equivalent), and telemetry monitoring). Patients with myocardial infarctions who present with angina should have their angina type and CCS Class coded in addition to their myocardial infarction. Thus, a patient presenting with angina at rest who is subsequently diagnosed with a myocardial infarction would have angina=yes, type=unstable, CCS=Class IV, MI=yes.

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
27. NYHA (New York Heart Association) Congestive Heart Failure Functional Class	**I=** Patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or angina. **II=** Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitations, dyspnea, or anginal pain. **III=** Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity results in fatigue, palpitations, dyspnea, or anginal pain. **IV=** Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased. If this information is not defined in the patient's chart, the minimum data requirement is the notation of a NYHA status to be calculated by the data manager using the patient's recorded history and the detail definition of the three scales. Asymptomatic patient should be classified as a NYHA Class I. NYHA class should be utilized to determine functional class secondary to heart failure.	NYHA class refers to the severity of recent heart failure (within two weeks of surgery) and not to past episodes of CHF. If a patient has a history of heart failure but is well compensated with no or only minimal symptoms at the time of surgery, the patient is coded as NYHA=Class I, CHF=yes.

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
28. CCS (Canadian Cardiovascular Society) Angina Class	**I=** Ordinary physical activity does not cause angina. Angina may occur with strenuous, rapid or prolonged exertion at work or recreation. **II=** There is slight limitation of ordinary activity. Angina may occur with walking or climbing stairs rapidly, walking uphill, walking or stair climbing after meals or in the cold, in the wind, or under emotional stress, or walking more than two blocks on the level, and climbing more than one flight of stairs at normal pace under normal conditions. **III=** There is marked limitation of ordinary physical activity. Angina may occur after walking one or two blocks on the level or climbing one flight of stairs under normal conditions at a normal pace. **IV=** There is inability to carry on any physical activity without discomfort; angina may be present at rest.	CCS angina class refers to the highest recent class (in the two weeks before surgery). Patients who have never had angina are coded as angina=no, CCS=Class I. Class I also refers to patients who have had angina in the past but are now *asymptomatic* and to patients who have symptoms only with strenuous activity (both would be angina=yes, CCS=Class I). Patients with angina at rest or with even minimal activity are Class IV (this includes many patients with unstable angina). Classify angina when present even for patients with myocardial infarctions. Thus, code a patient presenting with chest pain at rest and a myocardial infarction as angina=yes, angina unstable=yes, CCS=class IV, MI=yes.

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
29. Acuity (Elective, Urgent, Emergent, or Salvage)	Refers to the severity of the patient's condition in the immediate pre–operative time period. An elective operation is one that is performed on a patient with cardiac function that has been stable in the days or weeks prior to operation. Elective cases are usually scheduled at least one day prior to the surgical procedure. An urgent operation is one in which surgery is required within 24 hours in order to minimize the chance of further clinical deterioration. Typical patients include those with sudden, worsening chest pain and/or congestive heart failure, life–threatening coronary vascular anatomy, or those who are symptomatic at rest. Delay in operation is necessitated only by attempts to improve the patient's condition, availability of a spouse or parent for informed consent, availability of blood products, or the availability of results of essential laboratory procedures or tests. An urgent status is not merited by left main disease alone, use of heparin infusions, or purely administrative considerations. Patients requiring emergency operations will have ongoing, refractory, unrelenting cardiac compromise, with or without hemodynamic instability, and not responsive to any form of therapy except cardiac surgery. An emergency operation is one in which there should be no delay in providing operative intervention. Emergent/salvage: Patient undergoing CPR en route to the operating room or prior to induction of anesthesia.	Status refers to the patient's condition immediately before surgery; it should not reflect instability which occurs after the induction of anesthesia or the operative outcome. Status does not assess operative risk but rather how expediently surgery must be performed. Thus, some elective patients may be at higher risk than urgent patients; for example, an elderly patient with an ejection fraction of 20% and COPD operated on electively compared to a young patient with a normal ejection fraction who has ongoing unstable angina. Elective surgeries are performed on patients whose cardiac function has been stable. They are usually scheduled at least one day prior to surgery, and the clinical picture allows discharge from the hospital with readmission for surgery later. A surgery is elective even if the patient was operated on during a hospitalization for an acute coronary syndrome if he or she *could have been discharged* to have surgery at a later date. Elective patients are at a low risk for morbidity or death outside of the hospital given good medical management and restricted activities. Urgent surgeries are performed on patients whose medical condition requires continuous hospitalization prior to CABG. The patients may be operated on in the next available surgical suite but would not necessarily take precedence over an elective case and, *clarifying the STS definition,* could wait more than 24 hours, possibly several days. A critical feature that distinguishes urgent from elective patients is that urgent patients *cannot be safely discharged* prior to their CABG, but they can safely await CABG in the hospital. An intra–aortic balloon pump or IV nitroglycerin may be part of treatment. Emergent surgeries are performed on patients whose condition dictates that the surgery be performed within several hours to prevent morbidity or death. These cases should take precedence over an elective case, cause a new operating room to be opened, or be done at night or on a weekend if necessary. A critical feature which distinguishes emergent from urgent patients is that emergent patients *cannot safely delay CABG even while they are in the hospital*. Salvage surgeries are performed on a patient undergoing CPR en route to operating room or in the operating room prior to induction of anesthesia.

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
30. Ejection Fraction (5 to 90%)		Most recent prior to surgery.
31. Method for Measuring Ejection Fraction (LV Gram, Radionuclide, or Echocardiogram)		Ejection fraction (EF) is determined by one of the following methods (in order of preference): Left ventriculogram, radionuclide scan, or echocardiogram. EF is an important predictor of risk. Make every effort to obtain it when available. Use the last determination of EF prior to surgery. When an official report gives both a calculated EF and an estimated EF, use the calculated value. The EF must be obtained from the official report of one of the above three studies; do not use an "estimate," which, in contrast to the STS system, will be considered the same as a missing value. If a range of EF's is given, enter the mean value (e.g. for "30 to 35%," enter "32" –the STS system has no space for 32.5). If the EF or "left ventricular function" is described qualitatively, enter as follows: normal = 65%, mildly reduced = 50%, moderately reduced = 35%, and severely reduced = 20%. A transesophageal echocardiogram (TEE) done during surgery should not be used as a source for either mitral regurgitation or EF, unless it is the only available study, because operative conditions can artifactually alter both mitral regurgitation and ejection fraction.
32. Left Main Stenosis (%)		Actual percent

APPENDIX A: DEFINITIONS AND INSTRUCTIONS FOR CCMRP DATA SUBMISSIONS

Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
33. Coronary Disease – Number of Vessels	None, single, double, triple. The number of major (LAD system, Cx system, Right system) coronary vessels with > 50% narrowing in any angiographic view. Enter none if only left main disease.	The number of vessels refers to the number of major coronary arteries that are diseased. Consider a major coronary artery as diseased if it or one of its first order branches has a >50% stenosis. The three major coronary arteries and their first order branches are 1) the left anterior descending (LAD) with its branches the diagonals; 2) the circumflex (Cx) with its branches the obtuse marginals (OM's) or circumflex marginals; and 3) the right coronary artery (RCA) with its branch the posterior descending artery (PDA). Consider left main disease separately from the LAD and circumflex. Thus, code the "number of vessels" as "none" for a patient who has stenosis of the left main but not the LAD, circumflex, or RCA. When the posterior descending artery (PDA) is supplied by the circumflex (i.e., when the circumflex instead of the right coronary artery is dominant), count the PDA (but NOT the non–dominant RCA) as a major vessel. Thus, a patient with stenoses of the LAD, an obtuse marginal branch off of the circumflex, and the PDA off of the circumflex would be coded as having triple vessel disease (even if the non–dominant right coronary is normal). When a large ramus medianus branch supplies part of the LAD or circumflex distribution, count the ramus as a first order branch of one of those vessels. Thus, a patient with stenoses of the ramus, circumflex, and RCA may be counted as 3 vessel disease (however, do NOT count 3 vessel disease if disease involves the LAD, circumflex, and ramus but not a dominant RCA). NOTE: the number of major arteries counted as diseased may differ from the number of bypass grafts placed (e.g., a graft may be placed to a vessel with < 50% stenoses or two grafts to the LAD and diagonal even though both are part of a single major vessel).
34. Mitral Insufficiency	Is there evidence of regurgitation: 0 = none, 1 = trivial, 2 = mild, 3 = moderate, 4 = severe.	Mitral insufficiency (or regurgitation) should be determined by (in order of preference) either the echocardiogram or the left ventriculogram. The preferred order for MR favors echocardiogram over left ventriculogram; this is the opposite of the preferred order for ejection fraction. However, either method is adequate and it is not necessary to obtain an echocardiogram in patients already having ventriculograms. If a range of MR is given, enter the higher value (e.g. for "2 to 3" enter "3"). Transesophageal echocardiograms (TEE's) done during surgery should not be used as a source for either MR or EF, because operative hemodynamic conditions can artifactually alter both.
35. Cross Clamp Time	Minutes.	
36. Perfusion Time	Minutes.	
37. IMA (Internal Mammary Artery) Used	Yes/No.	

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Data Elements	STS Definitions	CCMRP Comments, Modifications, and Examples
38. Cardioplegia	Yes/No.	
39. Date of Discharge	MM–dd–yy	
40. Patient Status at Discharge		Note for STS users: CCMRP will collect the data element "Mortality (Yes/No)"
41. Date of Death	MM–dd–yy	If known

Of the above elements, a cardiac surgeon or cardiologist should review the following:

COPD (Yes/No)
NYHA Heart Failure Class (I, II, III, IV)
Unstable Angina (Yes/No)
Status (Elective, Urgent, Emergent, Salvage)
Congestive Heart Failure (Yes/No)
Angina (Yes/No)
CCS Angina Class

APPENDIX B: DESCRIPTIONS OF CABG REPORTING PROGRAMS OPERATED BY OTHER STATES AND ORGANIZATIONS

New York State Department of Health

The New York State Department of Health reports risk–adjusted CABG mortality rates at the hospital and surgeon level. Unlike California, New York limits the number of hospitals that can perform bypass surgery, through its Certificate of Need process. New York State has issued reports encompassing bypass surgery data from 1989–1991, 1992, 1992–1994 and 1996-1998. Additionally, the state has published data on risk–adjusted mortality rates for angioplasty at the hospital level, based on discharges for 1994. Hospitals collect data on patient demographics and clinical characteristics (40 risk factors) and submit the data to the Department of Health for analysis. Data are audited to ensure the quality of information reported into the system and to safeguard against upcoding. The consumer report uses bar charts (showing the mean and confidence interval) to show the number of cases and risk–adjusted outcomes, while the technical reports present results using a numeric format. Results can be viewed at the State's website (www.health.state.ny.us/nydoh/consumer/heart/).

New Jersey Department of Health and Senior Services

In 1997, New Jersey began reporting on risk–adjusted CABG mortality rates, at the hospital and surgeon level, showing data from 1994–1995. Surgeon level data are presented only for those surgeons who performed at least 100 operations over the two–year period. All 13 hospitals in New Jersey that perform cardiac surgery are required to collect and submit information on patient demographics, pre–operative risk factors, complications of surgery, and discharge status. The Peer Review Organization of New Jersey verifies the accuracy of data by comparing a random sample of cases against medical records. The consumer report presents risk–adjusted mortality results using bar charts (mean score and confidence intervals), while the technical report presents results in a numeric format. The guide is available at the Department's website (www.state.nj.us/health).

The Pennsylvania Health Care Cost Containment Council

The Pennsylvania Health Care Cost Containment Council was formed in 1986 and produced its first annual consumer report on coronary artery bypass graft surgery in 1989. The Council collects demographic data, hospital charges, and diagnosis and procedure codes using ICD–9–CM specifications. Data are gathered at the hospital level using the medical record and submitted to the Council on a quarterly basis. The Council contracts with MediQual Systems, Inc., and participating hospitals are required to use MediQual's Atlas Severity of Illness System to obtain patient severity and morbidity information. The Council's report shows the risk–adjusted in–hospital mortality rate by hospital (44 hospitals) and by surgeon for surgeons with a minimum of 30 cases in a year. Pennsylvania also provides statistics on the surgical approach used by each hospital and surgeon. The report includes other indicators of care such as average length of stay, charge per day, and risk–adjusted mortality rate by health plan (payor) and by hospital. The technical report shows a directory of physicians, the hospitals where the physician practices, and the case volume for each surgeon (both the number the

surgeon performs at an individual hospital as well as across all hospitals where the surgeon practices). The consumer report (***Pennsylvania's Guide to Coronary Artery Bypass Graft Surgery, 1994–1995***) presents the data using a bar chart while the technical report presents the results in numeric fashion. Results can be viewed at the Council's website (www.phc4.org).

Cleveland Health Quality Choice

The Greater Cleveland Health Quality Choice Coalition was formed in 1989 to design and develop quality measurement systems; however, this program ceased operations in 1999. The coalition published its first report in 1989. The ***1998 Greater Cleveland Consumer Report on Hospital Performance*** reports on patient satisfaction, general medical outcomes, general surgical outcomes, intensive care outcomes, C–section and VBAC rates, and outcomes by clinical services. Most of the data in the report are not focused on CABG surgery. For the 1998 report, nine hospitals performed bypass surgery. The report shows risk–adjusted in–hospital mortality rates and length of stay by hospital. The consumer report presents information using symbols (arrows) to display observed to expected performance. The technical report presents data using a numeric format. The coalition uses hospital discharge data (administrative data) to prepare its reports. For more information, view the coalition's website (www.cpl.org/CHQC/).

The Veterans Affairs Continuous Improvement in Cardiac Surgery Program (CICSP)

In 1972, the Department of Veterans Affairs (VA) created the Cardiac Surgery Consultant's Committee (CSCC) to improve the quality of cardiac care provided to veterans. The Continuous Improvements in Cardiac Surgery Study (CICSS) emerged in 1987 from the work of this committee. The initiative was re–named The Continuous Improvements in Cardiac Surgery Program (CICSP) in 1993, and since that time it has compared the quality of cardiac care across VA facilities. The program collects and reports a cross–section of risk–adjusted morbidity and mortality rates in a series of six–month time segments, and it also tracks trends over time. There are no minimum volume exclusion criteria, so all cardiac surgeries at all VA hospitals are included in the analysis. Also, if a local hospital provides cardiac care to VA patients through a sub–contractor arrangement, the outcomes from that hospital are added to the analysis. The data for the program are validated through multiple processes; these include built–in quality checks within the computer system which holds the abstracted data, as well as inter–rater reliability checks across abstraction forms. Semi–annually, the risk–adjusted outcome information is distributed in the form of a confidential internal report to the CSCC. Each participating facility receives a blinded copy of each report and its own hospital code identifier. No data are made publicly available to patients/consumers.

APPENDIX C: 1997–1998 CCMRP DATA COLLECTION FORM/TOOL

Patient Name:_____ Surgery Date _____
(for your use only)

Demographics

☐ Male ☐ Female Date of Birth _____

Race/Ethnicity _____ Insurer _____

Patient's Zip Code_____

History

Height _____ cm Weight _____ kg Creatinine prior to surgery _____ mg/dl

☐ Hypertension ☐ Dialysis ☐ Diabetes

☐ Peripheral Vasc Disease ☐ Cerebrovascular Disease ☐ Ventricular Arrhythmia

☐ MI Date of most recent MI _____

No. of prior ops w/ cardio bypass _____ Date most recent cardiac op _____

No. of prior PTCAs _____ ☐ PTCA on current admission PTCA–Surgery Interval _____ hrs.
(If this admission)

A surgeon or cardiologist should review the following:

☐ COPD ☐ CHF NYHA: ☐ I ☐ II ☐ III ☐ IV

☐ Angina ☐ Unstable Angina CCS Class: ☐ I ☐ II ☐ III ☐ IV

Status: ☐ Elective ☐ Urgent ☐ Emergent ☐ Salvage

Catheterization Data:

EF _____% EF measured by: ☐ LV Gram ☐ Radionuclide ☐ Echocardiogram

Left main stenosis _____ %

Coronary disease (stenosis > 50%): ☐ none ☐ single ☐ double ☐ triple

Mitral insufficiency: ☐ none ☐ trivial ☐ mild ☐ moderate ☐ severe

Operative Data Cross clamp time: _____ minutes Perfusion time: _____ minutes

☐ IMA graft ☐ Cardioplegia

Discharge Date of discharge _____ Status at discharge: ☐ alive ☐ dead

Date of death (if known) _____

APPENDIX D: VARIABLES FROM JONES AND COLLEAGUES (1996)*

Information Category	Core Variables	Level 1 Variables	Level 2 Variables
Demographics	• Age • Gender	• Height • Weight	• Race • Educational level • Marital status • Location of residence
Administrative			• Institution where CABG performed • Surgeon responsible for CABG • Payment source
History	• Previous heart operation	• PTCA on current admission • Date of most recent MI • Angina history	• Date of last cardiac operation • Number of previous CABG's • Angina on admission • Number of previous PTCAs • Date of most recent PTCA • Number of previous MIs
Left ventricular function	• Left ventricular ejection fraction		• Left ventricular end–diastolic pressure
Left main disease	• % stenosis of left main coronary artery		
Other cardiac conditions		• Serious ventricular arrhythmias • Congestive heart failure • Mitral regurgitation	
Cardiovascular risk factors		• Diabetes • Cerebrovascular disease • Peripheral vascular disease	• Smoking • Hypertension • Diabetes sequelae
Comorbid conditions		• COPD • Creatinine levels	• Cardiac pacemaker • Refusal of blood products • Substance abuse • Liver disease • Malignancy • Immunosuppressed state
Acuity	• Elective • Urgent • Emergent/ongoing ischemia • Emergent/hemodynamic instability • Emergent/salvage		• Hospital location before operation

* See "Identification of Preoperative Variables Needed for Risk Adjustment of Short–term Mortality after Coronary Artery Bypass Graft Surgery," JACC 28(6): 1478–87.

APPENDIX E: PRINCIPLES OF PARTICIPATION AGREEMENT WITH HOSPITALS

Hospital who signs below (hereinafter referred to as "Hospital") and the California CABG Mortality Reporting Program (hereinafter referred to as "CCMRP"), through the Pacific Business Group on Health (hereinafter referred to as "PBGH") and the Office of Statewide Health Planning and Development (hereinafter referred to as "OSHPD"), propose jointly to undertake the collection, verification, and reporting of pre–operative risk factor and mortality data with regard to isolated coronary artery bypass graft (CABG) procedures.

PBGH and OSHPD established CCMRP, a **voluntary statewide reporting program**, to collect hospital–level performance data on CABG surgeries. PBGH and OSHPD will neither have access to surgeon–identifiable information nor individual patient identifiers.

Hospitals who voluntarily agree to participate are asked to adhere to the principles outlined below, established by PBGH and OSHPD for CCMRP. Hospitals entering into this voluntary agreement may terminate the agreement at any time without cause upon notice to PBGH.

PBGH and OSHPD agree to the following principles:

- While PBGH and OSHPD do not require that Hospital does so, it encourages Hospital to participate in the Society of Thoracic Surgeons cardiac surgery data registry, and has made efforts to coordinate data elements, definitions, and training with the STS.
- PBGH and OSHPD will make available training sessions and training materials to all interested hospital staff on how to collect and code the required data elements. Training sessions and materials will be made available periodically at no cost to attendees. Although attending a training session is optional for a hospital, staff must complete a short test, provided by PBGH and OSHPD, to ensure a minimum level of proficiency in coding.
- PBGH and OSHPD will compile data from all participating hospitals in California. The data will reside at OSHPD. OSHPD will adhere to standard rules of confidentiality on the release of data. The data will be accessible both to hospitals and the public.
- PBGH and OSHPD will clean and edit the data prior to analysis.
- PBGH and OSHPD will conduct periodic auditing of data at hospitals. PBGH and OSHPD will assume the costs of conducting the data audit.
- PBGH and OSHPD will provide participating hospital with risk–adjusted mortality rate data prior to the public release of this information.
- PBGH and OSHPD will make publicly available the risk adjustment model used in the analysis.
- PBGH intends to issue an annual report that defines the risk–adjusted mortality rate for CABG's at participating hospitals. Data will be reported at the hospital level only. PBGH intends to make these reports publicly available.
- PBGH and OSHPD intend to produce a public access database that will be available

through OSHPD.

- If Hospital does not participate in any other database registry and therefore does not have any other software program to collect its data, PBGH and OSHPD will provide free data entry software specifically designed to collect the data elements for CCMRP.

Hospital agrees to the following principles:

- Hospital will provide to PBGH and OSHPD pre–operative risk factor and mortality data on **all** isolated CABG surgeries performed at the hospital.
- Hospital agrees to submit data on a quarterly basis to PBGH and OSHPD no later than 30 days past the end of the reporting quarter. Data are to be submitted on computer diskette according to the specifications outlined. Data submission to CCMRP should not be construed as a replacement for submission of data to any other data registry and if Hospital participates in the Society of Thoracic Surgeons cardiac surgery database registry, it should continue to do so.
- Hospital agrees to remove all surgeon identifiers prior to submitting data to PBGH and OSHPD.
- Hospital agrees to participate in periodic audits of the data which will be conducted by PBGH and OSHPD. Hospital agrees to supply PBGH and OSHPD with requested medical records to verify the accuracy of data. Hospital will assume labor costs to pull requested medical records.
- Hospital agrees to designate a cardiac surgeon for CCMRP who will serve as a liaison for the hospital to PBGH and OSHPD.
- Hospital agrees to supply their own hardware (i.e., computer) for data entry of pre–operative risk factor and mortality data.
- Hospital agrees to allow appropriate personnel (e.g., surgeons, medical records staff, or data managers) to receive training (either in person or by written materials). Hospital agrees to have hospital personnel responsible for data entry complete a test regarding the coding of data in order to assure a minimum standard of data quality.

On behalf of _____ hospital, I agree to the above provisions of participation in CCMRP.

Signed: _____

Name: _____

Title: _____

Address: _____

_____

Phone: _____ FAX: _____

Name of designated cardiac surgeon: _____

_____

_____

(signature)