| VARIABLE | DESCRIPTION |
|---|---|
| ACTLIM31 | Limitation of activities at baseline (Health Status form CASS 03, question 2).<br>1 NONE no limitation of activities<br>2 INTRMT intermittent limitation<br>3 MILD mild limitation<br>4 MOD moderate limitation<br>5 SEVERE severe limitation<br>6 UNCRTN uncertain due to medical restrictions |
| AGE | Age at time of enrollment, computed from date of birth and date of enrollment into CASS (Patient History form CASS 04, for date of birth). Definition for age is the standard definition: if date of birth is January 2, 1950 and enrollment date is January 1, 1975 then age is .24 not 25. |
| ANEUR31 | Aneurysm recorded at baseline (Left Ventriculography form CASS 09, question D).<br>0 NO none recorded<br>1 YES aneurysm recorded for one or more segments |
| ANGINA | Anginal status at baseline (Present Illness form CASS 05, question 2.4).<br>0 NOPAIN no chest pain<br>1 DEFNOT definitely not angina<br>2 PRBNO probably not angina<br>3 PROB probable angina<br>4 DEF definite angina |
| ANTIAR31 | Antiarrhythmics taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).<br>0 NO<br>1 YES |
| ANTIPL31 | Antiplatelet agents taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).<br>0 NO<br>1 YES |
| ARREST31 | History of cardiac arrest at baseline (Patient History form CASS 04, question 9).<br>0 NO<br>1 YES |
| ASPRIN31 | Aspirin taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).<br>0 NO<br>1 YES |
| ASSIGN | Randomization assignment for randomized patients (Randomization form recorded at Coordinating Center).<br>1 MED medical<br>2 SURG surgical |
| BETA | Beta-blocking agent taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).<br>0 NO<br>1 YES |

**BRKDWN31** Enhances the definition of vessel disease by describing the actual vessels diseased (Coronary Artery form CASS 08). The mnemonic of the codes define these vessels by the following:

1) Left most character is either an "L" or "R". This stands for dominance; either left or right. Right also includes balanced and unknown dominance.
2) Next left most character is a digit, 0 to 3, referring to the number of diseased vessels according to the zero vessel disease algorithm.
3) Last 1 to 4 characters are codes referring to the actual diseased branches. For zero vessel disease the remaining characters stand for normal, minimal, or moderate zero vessel disease.

For one, two, and three vessel disease the coding is:

R for RCA; segments 1, 2, 3, and 4
M for left main; segment 11
L for LAD; segments 12, 13, 14, 15, and 16
C for circumflex; segments 18, 19, 20, 21, and 22
X for proximal or distal circumflex; segments 18 and 19
G for marginals; segments 20, 21, and 22
O for others; segments 23, 24, 25, 26, and 27

Coded:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | R0NORM | 14 | R3RLC | 27 | L2LO | 40 | L3MO |
| 2 | R0MIN | 15 | R2RM | 28 | L2GO | 41 | L3LMG |
| 3 | R0MOD | 16 | R3RLM | 29 | L2XG | 42 | L3LMO |
| 4 | R1R | 17 | R3RCM | 30 | L2XO | 43 | L3MGO |
| 5 | R1L | 18 | R3RLCM | 31 | L2XGO | 44 | L3LMGO |
| 6 | R1C | 19 | L0NORM | 32 | L3LGO | 45 | L3MX |
| 7 | R2RL | 20 | L0MIN | 33 | L3LX | 46 | L3LMX |
| 8 | R2RC | 21 | L0MOD | 34 | L3M | 47 | L3MXG |
| 9 | R2LC | 22 | L1L | 35 | L3LXG | 48 | L3MXO |
| 10 | R2M | 23 | L1G | 36 | L3LXO | 49 | L3MXG |
| 11 | R2LM | 24 | L1O | 37 | L3LXGO | 50 | L3LMXO |
| 12 | R2CM | 25 | L2X | 38 | L3LM | 51 | L3MXGO |
| 13 | R2LCM | 26 | L2LG | 39 | L3MG | 52 | L3_ALL |

**CAGE5031** Count of number of segments from baseline Coronary Arteriography form (CASS 08, page 3) which show stenosis ≥ 50%. Dominance is not considered in count.

**CAGE7031** Count of number of segments from baseline Coronary Arteriography form (CASS 08, page 3) which show stenosis ≥ 70%. Dominance is not considered in count.

**CHC** Canadian Heart Class at baseline (Present Illness form CASS 05, question 2.4.1).

| | | |
|---|---|---|
| 0 | NOANG | No angina |
| 1 | I | Class I, ordinary physical activity does not cause angina |
| 2 | II | Class II, slight limitation or ordinary activity due to angina |
| 3 | III | Class III, marked limitation of ordinary physical activity due to angina |
| 4 | IV | Class IV, inability to carry on any physical activity without discomfort due to angina |
| 5 | UNREL | angina unrelated to exertion |

**CHF** History of congestive heart failure at baseline (Present Illness form CASS 05, question 3).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | UNKNWN | unknown |
| 2 | YES | |

CHFSCR Congestive heart failure score, index of congestive heart failure. Score is based on four items: history of congestive heart failure; use of digitalis at baseline; use of diuretic at baseline; and presence of rales on physical examination. One point is awarded for a positive response to each item.

| | | |
|---|---|---|
| 0 | ZERO | no congestive heart failure |
| 1 | ONE | least severe congestive heart failure |
| 2 | TWO | |
| 3 | THREE | |
| 4 | FOUR | most severe congestive heart failure |

CHOLST31 Cholesterol (fasting) recorded at baseline physical examination (Physical Exam form CASS 06, question B.4).

CHPAIN31 History of chest pain within 6 weeks prior to baseline (Present Illness form CASS 05, question 2).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | YES | |

COLLAT31 Collaterals recorded at baseline (Coronary Arteriography form CASS 08, page 3).

| | | |
|---|---|---|
| 0 | NO | no collaterals recorded |
| 1 | YES | one or more collaterals recorded |

DAYS131 Enrollment date as a Julian date with January 1, 1974 as day 1.

DIABTS31 History of diabetes at baseline (Patient History form CASS 04, question 7).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | UNCRTN | uncertain |
| 2 | YES | |

DIASBP31 Diastolic blood pressure at baseline (Physical Exam form CASS 06, question A.4).

DIGITL Digitalis taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | YES | |

DIPYRD31 Dipyridamole taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | YES | |

DIURET Diuretic taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | YES | |

DOCMI31 History of documented myocardial infarction at baseline (Patient History form CASS 04, question 8).

| | | |
|---|---|---|
| 0 | NOMI | no MI recorded |
| 1 | NOTDOC | neither first nor last MI documented by medical record |
| 2 | DOC | first MI and/or last MI documented by medical record |

DOMIN31 Dominance at baseline (Coronary Arteriography form CASS 08, page 3).

| | | |
|---|---|---|
| 1 | LEFT | |
| 2 | RIGHT | |
| 3 | BAL | balanced |

**ECGMI** Myocardial infarction at baseline (ECG form CASS 19, variable 28).

| | | |
|---|---|---|
| 0 | NONE | |
| 1 | HEALED | |
| 2 | UNRSLV | unresolved |
| 3 | ACUTE | |

**EJECFR** Ejection fraction at baseline (Left Ventriculography form CASS 09, question A.3).

**EMPLOY** Employment status at baseline (Patient History form CASS 04, question 5.A).

| | | |
|---|---|---|
| 1 | FULL | full-time, employed 40 hours a week or more |
| 2 | PART | part-time, employed less than 40 hours a week |
| 3 | RETIRD | retired, stopped working on reaching retirement age, as opposed to quitting because of physician's advice, incapacitation or fear |
| 4 | QUIT | quit, forced to quit prior to retirement age because of cardiac symptoms, with or without recommendation of physician |
| 5 | OTHER | other, currently unemployed (by economic circumstance or choice), on temporary sick leave or disabled secondary to a noncardiac illness |

**FAMHST31** Family history of angina or MI before age 55 in any of the patient's parents, siblings, aunts or uncles (blood relation) at baseline (Patient History form CASS 04, question 1).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | UNKNWN | unknown |
| 2 | YES | |

**GROUP** Group to which patient could be randomized at baseline (Patient Disposition form CASS 17, question B.1):

| | | |
|---|---|---|
| 0 | NOGRP | did not fit randomization criteria |
| 1 | A | primary problem is angina without MI in preceding three weeks; ejection fraction greater than or equal to .50 |
| 2 | B | primary problem is angina without MI in preceding three weeks; ejection fraction less than .50 |
| 3 | C | no angina, more than three weeks post-MI and no decompensated heart failure |

**HEART31** Heart measurement on chest x-ray at baseline (Coronary Arteriography form CASS 08, question A.1).

| | | |
|---|---|---|
| 0 | NORMAL | normal, no enlargement, no abnormalities |
| 1 | NTMORM | LV contour or other abnormality, but not enlargement |
| 2 | SLTENL | slight enlargement, with or without LV contour or other abnormalities |
| 3 | MODENL | moderate enlargement, with or without LV contour or other abnormalities |
| 4 | MRKENL | marked enlargement, with or without LV contour or other abnormalities |

**HEIGHT31** Height in centimeters at baseline (Physical Exam form CASS 06, question A.2).

**HYPRTN31** History of hypertension at baseline (Patient History form CASS 04, question 7).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | UNCRTN | uncertain |
| 2 | YES | |

**ILLCNT31** Count of illnesses listed under medical history at baseline (Patient History form CASS 04, question 7):

hypertension
diabetes
cerebrovascular
peripheral arterial
valvular heart disease
chronic pulmonary
thrombophlebitis
hepatic
renal
gout
neoplastic
peptic ulcer
other

**IMPAIR** Functional impairment due to congestive heart failure at baseline (Present Illness form CASS 05, question 3.2).

| | | |
|---|---|---|
| 0 | NOCHF | no congestive heart failure |
| 1 | NONE | no functional impairment due to congestive heart failure |
| 2 | MILD | mild functional impairment due to congestive heart failure |
| 3 | MOD | moderate functional impairment due to congestive heart failure |
| 4 | SEVERE | severe functional impairment due to congestive heart failure |

**INDEX131** Composite variable of PRXVES31, LVSCOR, and VESSEL. This variable is used for adjustment, or stratification, for the angiographic findings; as well as selecting subgroups with different survival patterns.

| CODE | DISEASED VESSELS | PROXIMAL VESSELS | LVSCORE |
|---|---|---|---|
| 1 | 0 | 0 | 5-11 |
| 2 | 0 | 0 | 12-16 |
| 3 | 0 | 0 | 17-30 |
| 4 | 1 | 0 | 5-11 |
| 5 | 1 | 0 | 12-16 |
| 6 | 1 | 0 | 17-30 |
| 7 | 1 | 1 | 5-11 |
| 8 | 1 | 1 | 12-16 |
| 9 | 1 | 1 | 17-30 |
| 10 | 2 | 0 | 5-11 |
| 11 | 2 | 0 | 12-16 |
| 12 | 2 | 0 | 17-30 |
| 13 | 2 | 1 | 5-11 |
| 14 | 2 | 1 | 12-16 |
| 15 | 2 | 1 | 17-30 |
| 16 | 2 | 2 | 5-11 |
| 17 | 2 | 2 | 12-16 |
| 18 | 2 | 2 | 17-30 |
| 19 | 3 | 0 | 5-11 |
| 20 | 3 | 0 | 12-16 |
| 21 | 3 | 0 | 17-30 |
| 22 | 3 | 1 | 5-11 |
| 23 | 3 | 1 | 12-16 |
| 24 | 3 | 1 | 17-30 |
| 25 | 3 | 2 | 5-11 |

| | | | |
|---|---|---|---|
| 26 | 3 | 2 | 12-16 |
| 27 | 3 | 2 | 17-30 |
| 28 | 3 | 3 | 5-11 |
| 29 | 3 | 3 | 12-16 |
| 30 | 3 | 3 | 17-30 |

Coded:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | C001 | 10 | C201 | 19 | C301 | 28 | C331 |
| 2 | C002 | 11 | C202 | 20 | C302 | 29 | C332 |
| 3 | C003 | 12 | C203 | 21 | C303 | 30 | C333 |
| 4 | C101 | 13 | C211 | 22 | C311 | | |
| 5 | C102 | 14 | C212 | 23 | C312 | | |
| 6 | C103 | 15 | C213 | 24 | C313 | | |
| 7 | C111 | 16 | C221 | 25 | C321 | | |
| 8 | C112 | 17 | C222 | 26 | C322 | | |
| 9 | C113 | 18 | C223 | 27 | C323 | | |

**INSULIN** Insulin taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

0 NO
1 YES

**JOB** Type of employment at baseline or, if retired or quit, the most recent occupation (Patient History from CASS 04, question 5.B).

| | | |
|---|---|---|
| 1 | LABOR | laborer, regular working day includes routine performance of heavy manual labor and/or physical exertion |
| 2 | CLERCL | clerical, any form of employment not regularly associated with heavy manual labor that does not involve stressful decision-making responsibility |
| 3 | PROFES | professional, occupations that require advanced training and involve mental rather than physical work, as well as a definite amount of stress and responsibility associated with decision making. |
| 4 | HOMEMK | homemaker, primarily work in the home, chores and responsibilities of managing the household |
| 5 | OTHER | other, any occupation that does not fall into the categories of laborer, clerical, professional or homemaker. |

**LIMFCT31** Main factor which causes limitation of activities at baseline (Health form CASS 03, question 3).

| | | |
|---|---|---|
| 0 | NA | no limitation |
| 1 | CHPAIN | chest pain |
| 2 | STROKE | residua of stroke |
| 3 | SOB | shortness of breath |
| 4 | LEGCRP | leg cramps |
| 5 | FATIG | general fatigue |
| 6 | ORTHO | orthopedic problems |
| 7 | OTHER | other |

**LMCA31** Left main coronary artery, % obstruction at baseline, coded UNKNOWN if not visualized (Coronary Arteriography form CASS 08, page 3).

**LMEQ31** Left main equivalent disease, exists when LMCA has < 70% stenosis and both proximal LAD and proximal CX have $\geq$ 70% stenosis (Coronary Arteriography form CASS 08, page 3).

0 NO
1 YES

**LVEDP** LV end diastolic pressure at baseline (Left Ventriculography form CASS 09, question A.1).

LVSCOR

Left ventricular wall motion score, measure of left ventricular function. The RAO ventriculogram is divided into five segments; anterobasal, anterolateral, apical, diaphragmatic, and posterobasal. The motion of each of these segments is scored as normal-1, moderate hypokinesis-2, severe hypokineses-3, akinesia-4, and dyskinesia-5. When aneurysm is recorded, a score of 6 is assigned to the particular segment. When neither normal nor abnormal wall motion nor the presence of an aneurysm is recorded for a segment, but mural thrombus is recorded, a score of 6 is assigned to the particular segment. The scores for each segment are summed over all five segments; a score of 5 represents a completely normal left ventricle, whereas a score of 30 is theoretically possible. The higher the score, the worse the segmental wall motion.

MITREG31

Mitral regurgitation at baseline (Left Ventriculography form CASS 09, question C).

0 NONE
1 SLIGHT
2 MOD moderate
3 SLIGHT

MNHCHI31

MNHCH Index is a numerical score for severity of vessel disease. The equations were defined using:

L(i) is the percent stenosis for segment i
W(i) = 1 - ( L(i) / 100 )

The following variables were entered into stepwise Cox runs. The resulting equations include those variables which proved significant.

For right, balanced, and unknown dominance:

```
V(4)  = W(1) * W(2) * W(3) * W(4)
V(5)  = W(1) * W(2) * W(3) * W(5)
V(14) = W(11) * W(12) * W(13) * W(14)
V(15) = W(11) * W(12) * W(13) * W(15)
V(19) = W(11) * W(18) * W(19)
V(20) = W(11) * W(18) * W(20)
V(21) = W(11) * W(18) * W(21)
V(22) = W(11) * W(18) * W(22)
MNHCH = ( V(4) * 0.119 ) + ( V(14) * 0.168 ) +
        ( V(19) * 0.063 ) + ( V(20) * 0.049 )
```

For left dominance:

```
V(14) = W(11) * W(12) * W(13) * W(14)
V(15) = W(11) * W(12) * W(13) * W(15)
V(20) = W(11) * W(18) * W(19) * W(20)
V(21) = W(11) * W(18) * W(19) * W(21)
V(22) = W(11) * W(18) * W(19) * W(22)
V(23) = W(11) * W(18) * W(19) * W(23)
V(27) = W(11) * W(18) * W(19) * W(27)
MNHCH = V(27) * 0.144
```

MYOJEP31

The myocardial jeopardy index relates the functional status of left ventricular segments to the presence or absence of proximal stenosis greater than or equal to 70% in the major artery supplying these segments. Left ventricular wall segments which move normally, or are moderately or severely hypokinetic are assumed to be at risk of infarction if the major artery supplying them is stenotic. Akinetic or dyskinetic segments represent nonfunctional tissue and therefore are assumed not at risk of infarction. In the RAO projection, the anterobasal, anterolateral, and apical segments comprise the anterior wall which is supplied by the left main coronary artery and the

proximal and mid portions of the left anterior descending artery. The diaphragmatic and posterobasal segments form the inferior wall which is supplied by the proximal and mid right coronary artery in a right dominant, balanced, or unknown circulation, or by the left main coronary artery or the proximal circumflex artery in a left dominant circulation.

Note that 70% left main coronary artery stenosis is required for myocardial jeopardy. In some analysis other jeopardy variables have been used.

| | | |
|---|---|---|
| 0 | NONE | no jeopardized segments |
| 1 | ONE | inferior wall jeopardy |
| 2 | TWO | anterior wall jeopardy |
| 3 | THREE | both segments jeopardized |

NITRAT — Long-acting nitrates taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

0 NO
1 YES

NITRO — Nitroglycerin taken regularly within last 2 months before baseline (Present Illness form CASS 05, question 4).

0 NO
1 YES

NORMANG — Entirely normal baseline angiography (Coronary Arteriography form CASS 08, page 3).

0 NO
1 YES

OPVES31 — The number of operable vessels is a measure of the extent to which a patient is a suitable candidate for surgery. The number of operable vessels ranges from 0 to 3. As in the definition of the number of diseased vessels, dominance determines which three major vessels define the number of operable vessels. In a right dominant, balanced, or unknown circulation, these three branches are the right coronary artery (RCA), the left anterior descending artery (LAD), and the left circumflex artery. In a left dominant circulation, the three branches are the left anterior descending artery, the proximal left circumflex and its marginal branches, and the distal left circumflex and its posterolateral branches. The left main coronary artery (LMCA) is equivalent to three vessels in a left dominant circulation and two vessels in a right dominant, balanced, or unknown circulation.

Initially, it must be determined whether a patient is potentially operable; then the number of operable vessels is computed. The number of operable vessels is a function of the percent stenosis in the artery and of the morphology of the distal vessel to which a bypass could be grafted. For a vessel to be suitable for bypass grafting, it must have 50% or greater stenosis and its distal vessel must be of normal size.

RIGHT, BALANCED, OR UNKNOWN DOMINANCE

The number of operable vessels cannot be determined if either the right or the left coronary artery was not visualized.

Potentially operable. For a patient to be potentially operable there must be at least one of the following:

(a) stenosis of 70% or greater in at least one of proximal, mid, or distal right coronary arteries, right posterior descending artery, right posterolateral, proximal, mid, or distal LAD, first or second diagonals, proximal or distal circumflex, first, second, or third marginals, left atrial ventricular artery, or the left

posterior descending artery

(b) stenosis of 50% or greater in the left main coronary artery

Number of operable vessels. If the patient is potentially operable, the three major vessels are considered, to determine the number of operable vessels.

Right coronary artery. For the right coronary artery to be operable, at least one of the following conditions must be met:

(a) stenosis of 50% or greater in the proximal, mid, or distal right coronary artery and the distal vessel of either the RPDA or the RPLS is of normal size

(b) stenosis of 50% or greater in the RPDA and its distal vessel is of normal size

(c) stenosis of 50% or greater in the RPLS and its distal vessel is of normal size

If any one of these conditions is satisfied, then the right coronary artery is operable and counts as one operable vessel.

Left main coronary artery. For the left main coronary artery to be operable, there must be 50% or greater stenosis in the LMCA and at least one of the following conditions must be met:

(a) the distal vessel of the mid or distal LAD or that of the first or second diagonal is of normal size

(b) the distal vessels of the distal circumflex, its three marginals, the LAV, or the LPDA is of normal size

If both groups have at least one distal vessel of normal size, then the LMCA counts as two operable vessels. If only one group has a distal vessel of normal size, then the LMCA counts as one operable vessel.

LAD. The LAD is considered only if the LMCA has less than 50% stenosis. The LAD is operable if one of the following conditions is met:

(a) stenosis of 50% or greater in the proximal LAD and one of the distal vessels of the mid or distal LAD or the two diagonals is of normal size

(b) stenosis of 50% or greater in the mid LAD and one of the distal vessels of mid or distal LAD or the second diagonal is of normal size

(c) stenosis of 50% or greater in the distal LAD and its distal vessel is of normal size

(d) stenosis of 50% or greater in the first diagonal and its distal vessel is of normal size

(e) stenosis of 50% or greater in the second diagonal and its distal vessel is of normal size

If any one of these five conditions is satisfied, the LAD is operable and counts as one operable vessel.

Left circumflex. The left circumflex is considered only if the LMCA has less than 50% stenosis. The circumflex artery is operable if one of the following conditions is met:

(a) stenosis of 50% or greater in the proximal circumflex and one of the distal vessels of the three marginals or the LAV or LPDA is of normal size

(b) stenosis of 50% or greater in the distal circumflex and one of the distal vessels of the second and third marginals or the LAV or LPDA is of normal size

(c) stenosis of 50% or greater in one of the three marginals with the respective distal vessel of normal size

If any of these three conditions is met, then the circumflex artery is operable and is counted as one operable vessel.

LEFT DOMINANCE

The number of operable vessels cannot be determined if the left coronary artery was not visualized.

Potentially operable. For a patient to be potentially operable there must be at least one of the following:

(a) stenosis of 70% or greater in at least one of proximal, mid, or distal LAD, first or second diagonals, proximal or distal circumflex, first, second, or third marginals, left atrial ventricular artery, or the left posterior descending artery

(b) stenosis of 50% or greater in the left main coronary artery

Number of operable vessels. If the patient is potentially operable, the three major vessels are considered, to determine the number of operable vessels.

Left main coronary artery. For the left main coronary artery to be operable, there must be 50% or greater stenosis in the LMCA and at least one of the following conditions must be met:

(a) the distal vessel of the proximal, mid, or distal LAD or that of the first or second diagonal must be of normal size

(b) the distal vessels of the distal circumflex or the three marginals must be of normal size

(c) the distal vessel of the LAV or the LPDA must be of normal size

If all three groups have at least one distal vessel of normal size, then the LMCA counts as three operable vessels. If only one or two groups has a distal vessel of normal size, then the LMCA counts as one or two operable vessels, respectively.

LAD. The LAD is considered only if the LMCA has less than 50% stenosis. The LAD is operable if one of the following conditions is met:

(a) stenosis of 50% or greater in the proximal LAD and one of the distal vessels of the mid or distal LAD or the two diagonals is of normal size

(b) stenosis of 50% or greater in the mid LAD and one of the distal vessels of mid or distal LAD or the second diagonal is of normal size

(c) stenosis of 50% or greater in the distal LAD and its distal vessel is of normal size

(d) stenosis of 50% or greater in the first diagonal and its

distal vessel is of normal size

(e) stenosis of 50% or greater in the second diagonal and its distal vessel is of normal size

If any one of these five conditions is satisfied, the LAD is operable and counts as one operable vessel.

Left circumflex. The left circumflex is considered only if the LMCA has less than 50% stenosis. The circumflex artery is operable if there is 50% or greater stenosis in the proximal circumflex and at least one of the following conditions is met:

(a) one of the distal vessels of the three marginals is of normal size

(b) one of the distal vessels of the LAV or LPDA is of normal size

If both conditions are met, the circumflex counts as two operable vessels. If only one of the groups has a distal vessel of normal size, then the circumflex counts as one operable vessel.

Distal circumflex. The distal circumflex is considered only if no operable vessels are found when the proximal circumflex is considered. The circumflex artery is operable if there is 50% or greater stenosis in the distal circumflex, and at least one of the following conditions is met:

(a) one of the distal vessels of the second and third marginals is of normal size

(b) one of the distal vessels of the LAV or LPDA is of normal size

If both conditions are met, the circumflex counts as two operable vessels. If only one of the groups has a distal vessel of normal size, then the circumflex counts as one operable vessel.

Remaining segments. The remaining segments are considered only if no operable vessels are found when the proximal and distal circumflex are considered. The circumflex artery is operable if at least one of the following conditions is met:

(a) stenosis of 50% or greater in at least one of the marginals with the respective distal vessel of normal size

(b) stenosis of 50% or greater in the LAV and one of the distal vessels of the LAV and LPDA is of normal size; plus stenosis of 50% or greater in the LPDA and the distal vessel of the LPDA is of normal size

If both conditions are met, the circumflex counts as two operable vessels. If only one condition is met, then the circumflex counts as one operable vessel.

0 ZERO
1 ONE
2 TWO
3 THREE

PACKYR31 Number of pack-years patient has smoked at baseline (Patient History form CASS 04, question 2).

**PEAK31** Peak cigarette consumption at baseline (Patient History form CASS 04, question 2).

| | | |
|---|---|---|
| 0 | NA | non-smoker |
| 1 | LESS1 | less than 1 pack/day |
| 2 | ONETO2 | 1 to 2 packs/day |
| 3 | MORE2 | more than 2 packs/day |

**PREVMI** History of previous myocardial infarction at baseline (Patient History form CASS 04, question 8).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | SINGLE | |
| 2 | MULTPL | multiple |

**PRVBYP31** History of previous coronary artery bypass surgery at baseline (Patient History form CASS 04, question 10).

| | | |
|---|---|---|
| 0 | NO | |
| 1 | YES | |

**PRXCX31** Proximal circumflex artery, % obstruction at baseline, coded UNKNOWN if not visualized (Coronary Arteriography form CASS 08, page 3).

**PRXLAD31** Proximal left anterior descending artery, % obstruction at baseline, coded UNKNOWN if not visualized (Coronary Arteriography form CASS 08, page 3).

**PRXRCA31** Proximal right coronary artery, % obstruction at baseline, coded UNKNOWN if not visualized (Coronary Arteriography form CASS 08, page 3).

**PRXVES31** The number of diseased proximal vessels measures the amount of disease in the proximal portions of the major coronary arteries. The number of diseased proximal vessels ranges from 0 to 3. As in the number of diseased vessels, dominance determines which three major vessels define the number of diseased proximal vessels. In a right dominant, balanced, or unknown circulation, these three branches are the right coronary artery (RCA), the left anterior descending artery (LAD), and the left circumflex artery. In a left dominant circulation, the three branches are the left anterior descending artery (counts as one) and the left circumflex (counts as two). The left main coronary artery (LMCA) is equivalent to three vessels in a left dominant circulation and two vessels in a right dominant, balanced, or unknown circulation.

RIGHT, BALANCED OR UNKNOWN DOMINANCE

The number of diseased proximal vessels cannot be determined if either the right or the left coronary artery was not visualized.

Right coronary artery. The proximal right coronary artery counts as one diseased proximal vessel if there is a stenosis of 70% or greater.

Left main coronary artery. The left main coronary artery counts as two diseased proximal vessels if there is a stenosis of 50% or greater.

LAD. The proximal LAD is considered only if the left main

coronary artery has a stenosis of < 50%. The proximal LAD counts as one diseased proximal vessel if there is a stenosis of 70% or greater.

Left circumflex. The proximal left circumflex is considered only if the left main coronary artery has a stenosis of < 50%. The proximal left circumflex counts as one diseased proximal vessel if there is a stenosis of 70% or greater.

LEFT DOMINANCE

The number of diseased proximal vessels cannot be determined if the left coronary artery was not visualized.

Left main coronary artery. The left main coronary artery counts as three diseased proximal vessels if there is a stenosis of 50% or greater.

LAD. The proximal LAD is considered only if the left main coronary artery has a stenosis of < 50%. The proximal LAD counts as one diseased proximal vessel if there is a stenosis of 70% or greater.

Left circumflex. The proximal left circumflex is considered only if the left main coronary artery has a stenosis of < 50%. The proximal left circumflex counts as two diseased proximal vessels if there is a stenosis of 70% or greater.

0 ZERO
1 ONE
2 TWO
3 THREE

QCHEST31 Number of chest leads with codable QS and Q patterns when Q ≥ .03 seconds on baseline ECG (ECG form CASS 19, variable 43).

QINDEX31 Quetelet's index, an index of relative body weight: weight divided by the square of the height (Physical Exam form CASS 06, questions A.1 and A.2). See Khosla, T., and Lowe, C.R., Indices of obesity derived from body weight and height. Brit. J. Prev. Soc. Med. 21:122-128, 1967.

QLIMB31 Number of limb leads with codable QS and Q patterns when Q ≥ .03 seconds on baseline ECG (ECG form CASS 19, variable 43).

RDAYS Date of randomization as a Julian date with January 1, 1974 as day 1.

RECACT31 Recreational activity at baseline, level of daily recreation and/or physical activity during the last three months prior to enrollment (Patient History form CASS 04, question 6) coded:

1 STREN strenuous, physically demanding recreational activities usually involving competition, endurance and/or team effort or second job which requires heavy manual labor

2 MOD moderate, recreational activities performed for pleasure and relaxation involving physical activity but without ideas of competition, endurance or excellence or second job requiring moderate manual labor

3 MILD mild, recreational activities performed for pleasure and relaxation involving only slight physical activity or second job requiring light manual labor

4 SEDEN sedentary, recreational activities which may be done while sitting or second job which does not include manual labor

RMNTHS31 Randomization month with January 1974 as month 1.

S3SND31 S3 sound recorded at baseline physical examination (Physical Exam form CASS 06, question A.5).

0 NO
1 YES

SAREA31 Body surface area (BSA). $Weight^{0.5378} \times height^{0.3964} \times 0.24265 \times 10^4$, where weight (Physical Exam form CASS 6, question A.1) is in kg and height (Physical Exam form CASS 6, question A.2) is in cm and SAREA31 is in $cm^2$.

SEX Sex of patient (Patient History form CASS 04).

1 MALE
2 FEMALE

SMOKE Status of cigarette smoking at baseline (Patient History form CASS 04, question 2).

0 NEVER never smoked
1 FORMER formerly smoked
2 PRESNT presently smokes

SSURGJD Date of scheduled surgery for randomized patients (follow-up anniversary date).

STATUS Status of patient at baseline.

1 RAND randomized

2 RMIZBL randomizable, group A, B, or C (Patient Disposition form CASS 17, question B.1) from one of the randomizing sites during that site's period of randomization:

Alabama-July,1976-May,1979
Albany-July,1976-May,1979
Boston-July,1976-May,1979
Marshfield-September,1975-May,1978
MGH-October,1975-June,1978
Montreal-September,1975-December,1978
NYU-October,1975-May,1979
St. Louis-September,1975-May,1979
Stanford-August,1975-May,1979
Wisconsin-January,1976-August,1976 (group C only)
Yale-July,1976-May,1979

3 METCRT met criteria of randomization (see below) at one of the randomizing sites outside the period of randomization, at Wisconsin at any time for group A and B, or at one of the non-randomizing sites at

any time. That the patient met the criteria of randomization was defined by group A, B, or C being recorded on the Patient Disposition form (CASS 17, question B.1), or, in the absence of that form, by none of the exclusions listed below being recorded on other forms:

- age ≥ 65 (Patient History form CASS 04)
- neoplasm (Patient History form CASS 04, question 7)
- previous bypass surgery (Patient History form CASS 04, question 10)
- previous myocardial infarction dated within 3 weeks of enrollment (Patient History form CASS 04, question 8)
- Canadian Heart Class III or IV angina (Present Illness form CASS 05, question 2.4.1)
- normal coronaries or minimal disease (less than 1 vessel disease - see VESSEL) (Coronary Arteriography form CASS 08, page 3)
- less than 1 operable vessel - see OPVES31 (Coronary Arteriography form CASS 08, page 3)
- ≥ 70% stenosis of the left main coronary artery (Coronary Arteriography form CASS 08, page 3)
- < 35% ejection fraction (Left Ventriculography form CASS 09, question A.3)
- heart failure as predominant symptom or mild, moderate or severe functional impairment due to CHF (Present Illness form CASS 05, questions 1 and 3.2)
- asymptomatic or arrhythmia as predominant symptom and not probable or definite angina (Present Illness form CASS 05, questions 1 and 2.4) and cardiac arrest (Patient History form CASS 04, question 9)
- asymptomatic or arrhythmia as predominant symptom and not probable or definite angina (Present Illness form CASS 05, questions 1 and 2.4) and no previous MI (Patient History form CASS 04, question 8).

4 REG registry, all patients who did not fall into the categories of randomized, randomizable or met criteria of randomization (see above).

SURG Baseline surgery < 90 days after enrollment (Surgery from CASS 10).

0 NO no surgery or surgery ≥ 90 days after enrollment
1 YES surgery < 90 days after enrollment

SYMPTM Predominant symptom at baseline, responsible for current hospitalization and evaluation (Present Illness form CASS 05, question 1).

1 ASYMP asymptomatic, no clinical symptoms
2 HTFAIL heart failure, illness characterized by dyspnea on exertion, paroxysmal nocturnal dyspnea, orthopnea or considerable peripheral edema
3 ANGINA angina, predominant symptom is chest pain syndrome, unless pain is clearly noncardiac in origin
4 ARHTHY arrhythmia, atrial fibrillation or flutter, single PVC, paroxysmal supraventricular tachycardia, multiple PVCs, junctional rhythm, multifocal PVCs, idioventricular rhythm, frequent atrial premature beats, ventricular tachycardia, or sinus bradycardia
5 OTHER other, clearly noncardiac chest pain or extreme fatigue

**SYSBP31** Systolic blood pressure at baseline (Physical Exam form CASS 06, question A.4).

**THERPY31** Therapy recommended at baseline to patient who was not randomized, whether or not patient met randomization criteria (Patient Disposition form CASS 17, question A or B.2).

1 MED medical
2 SURG surgical

**TRIGLY31** Triglycerides, fasting triglycerides recorded at baseline physical examination (Physical Exam form CASS 06, question B.5).

**UNSTBL** Unstable angina status at baseline (Present Illness form CASS 05, question 2.4.2).

0 NOANG no angina
1 NO angina, but not unstable angina
2 YES unstable angina

**VES50** As in VESSEL, for stenosis 50% or greater.

0 ZERO
1 ONE
2 TWO
3 THREE

**VESSEL** The number of diseased vessels is a measure of the extent of disease in the three major coronary arteries. The number of diseased vessels ranges from 0 to 3. Dominance determines which three major vessels define the number of diseased vessels. In a right dominant, balanced, or unknown system, these three branches include the right coronary artery (RCA), the left anterior descending (LAD), and the left circumflex arteries. In a left dominant circulation, they include the left anterior descending artery, the proximal left circumflex and its marginal branches, and the distal left circumflex and its posterolateral branches. The left main coronary artery (LMCA) is equivalent to three vessels in a left dominant circulation and two vessels in a right dominant, balanced, or unknown circulation.

RIGHT, BALANCED, OR UNKNOWN DOMINANCE

The number of diseased vessels cannot be determined if either the right or the left coronary artery was not visualized.

Right coronary artery. The right coronary artery counts as one diseased vessel if there is a stenosis of 70% or greater in at least one of the following segments:

(a) proximal right coronary artery
(b) mid right coronary artery
(c) distal right coronary artery
(d) right posterior descending artery

Left main coronary artery. The left main coronary artery counts as two diseased vessels if there is a stenosis of 50% or greater.

LAD. The LAD is considered only if the LMCA has less than 50% stenosis. The LAD counts as one diseased vessel if there is a stenosis of 70% or greater in at least one of the following segments:

(a) proximal LAD
(b) mid LAD
(c) distal LAD

(d) first diagonal
(e) second diagonal

Left circumflex. The left circumflex is considered only if the LMCA has less than 50% stenosis. The left circumflex counts as one diseased vessel if there is a stenosis of 70% or greater in at least one of the following segments:
(a) proximal circumflex
(b) distal circumflex
(c) first obtuse marginal
(d) second obtuse marginal
(e) third obtuse marginal

LEFT DOMINANCE

The number of diseased vessels cannot be determined if the left coronary artery was not visualized.

Left main coronary artery. The left main coronary artery counts as three diseased vessels if there is a stenosis of 50% or greater.

LAD. The LAD is considered only if the LMCA has less than 50% stenosis. The LAD counts as one diseased vessel if there is a stenosis of 70% or greater in at least one of the following segments:
(a) proximal LAD
(b) mid LAD
(c) distal LAD
(d) first diagonal
(e) second diagonal

Left circumflex. The left circumflex is considered only if the LMCA has less than 50% stenosis. The left circumflex counts as two diseased vessels if there is a stenosis of 70% or greater in at least one of the following segments:
(a) proximal circumflex
(b) distal circumflex

Remaining segments. The remaining segments are considered only if the LMCA has less than 50% stenosis and both the proximal and distal circumflex have less than 70% stenosis. One diseased vessel is counted if there is a stenosis of 70% or greater in at least one of the following segments:
(a) first obtuse marginal
(b) second obtuse marginal
(c) third obtuse marginal

An additional one diseased vessel is counted if there is a stenosis of 70% or greater in at least one of the following segments:
(a) left atrial ventricular artery
(b) first posterolateral
(c) second posterolateral
(d) third posterolateral
(e) left posterior descending artery

0 ZERO
1 ONE
2 TWO
3 THREE

WEIGHT31 Weight in kilograms at baseline, to 1 decimal point (Physical Exam form CASS 06, question A.1).

ZERDIS

Normal, minimal, and moderate disease are categories of 0 vessel disease (where 0 vessel disease is the absence of 1, 2 or 3 vessel disease, as defined in Analysis Note #2) and serve to define 0 vessel disease more precisely. As in the definition of number of diseased vessels, dominance determines which vessels define the three categories of 0 vessel disease.

RIGHT, BALANCED, OR UNKNOWN DOMINANCE

Normal, minimal or moderate disease are determined only for cases with known 0-vessel disease. If any of the minor segments which define normal, minimal or moderate disease were not visualized, the category of 0-vessel disease cannot be determined.

Normal disease. Normal disease is defined as follows: stenosis of 0% in all segments 1-10, 11, 12-17, and 18-22.

Minimal disease. Minimal disease is defined as follows: not normal disease and

(a) stenosis of 0-49% in major segments 1-4, 12-16, 18-22; and
(b) stenosis of 0-69% in minor segments 5-10, 17; and
(c) stenosis of 0-29% in left main, segment 11.

Moderate disease. Moderate disease is defined as follows: neither normal nor minimal disease and

(a) stenosis of 50-69% stenosis in at least one of major segments 1-4, 12-16, or 18-22; or
(b) stenosis of 70% or greater in at least one of minor segments 5-10, or 17; or
(c) stenosis of 30-49% in left main, segment 11.

LEFT DOMINANCE

Normal, minimal or moderate disease are determined only for cases with known 0-vessel disease. If any of the minor segments which define normal, minimal or moderate disease were not visualized, the category of 0-vessel disease cannot be determined.

Normal disease. Normal disease is defined as follows: stenosis of 0% in all segments 1-3, 10, 11, 12-17, 18-22, and 23-27.

Minimal disease. Minimal disease is defined as follows: not normal disease and

(a) stenosis of 0-100% in minor segments 1-3, 10; and
(b) stenosis of 0-69% in minor segment 17; and
(c) stenosis of 0-49% in major segments 12-16, 18-22, 23-27; and
(d) stenosis of 0-29% in left main, segment 11.

Moderate disease. Moderate disease is defined as follows: neither normal nor minimal disease and

(a) stenosis of 50-69% in at least one of major segments 12-16, 18-22, or 23-27; or
(b) stenosis of 70% or greater in segment 17; or
(c) stenosis of 30-49% in left main, segment 11.

| | | |
|---|---|---|
| 0 | NORMAL | totally normal |
| 1 | MIN | minimal disease |
| 2 | MOD | modearate disease |
| 3 | ONE | one vessel disease |
| 4 | TWO | two vessel disease |
| 5 | THREE | three vessel disease |