HRAG Instructions (QxQs)

This table summarizes changes to the HRA QxQ as of 10/11/2019

Question in HRA QxQ	Description of Changes in HRA QXQ
General Instructions Item G. , pg. 2	• Guidelines updated for recording other time frames
Q20.e, pg. 5 & Q58, pg. 25	• Update to include the use of 6 lead ECGs
Q23.a., pg. 6	• Clarification made on how to record whether acute cardiac symptoms began prior to arrival at this hospital
Q23.b., pg. 7	• Clarification made on the timing between onset and hospital arrival
Q25.b., pg. 9	• Clarification made on how to record date of onset of pain
Q28.b., pg. 11	• Clarification made on how to record congestive heart failure or pulmonary edema
Q32., pg. 17	• Clarification made on how to record history of previous MI
Q42.b., pg. 20	• Clarification made on how to record type of procedure or trauma
Appendix BB, 31	• Updated list of medications Rybelsus (T,DM) Dulaglutide (G,DM) Semiglutide (G,DM) Ozempic (T,DM) Ryzodeg (T,DM) Glyxambi (T,DM) Gliclazide (G,DM) Tol-Tab (T,DM) Prexxartan (T, ACEI/ARB)

INSTRUCTIONS FOR ABSTRACTING
ARIC HOSPITAL RECORD ABSTRACTION FORM
HRA, VERSION G, 10/14/2015
QxQ, 10/11/2019

General Instructions

A. The abstractor must be familiar with the ARIC Instructions for Completion of forms.

B. Several types of responses are used:
Record text answers.
Record number, such as a date, time, medical record number, or measurement.

To answer most questions you will have several choices, the simplest of all being Yes = Y, No = N, or Unknown = U. In that case, "Yes" or "No" will be marked only if there is no doubt due to information in the hospital record. If nothing is written down that definitely answers the question, "U" should be recorded. If the response categories are just Yes = Y or No = N, information not recorded is then marked as "No". In general, the following may be considered synonyms:

NO	YES
• "Rule out" • "Suggestive" • "Equivocal" • "Suspicious" • "Questionable" • "Possible" • "Uncertain" • "Reportedly" • "Could be" • "Perhaps" • "Low probability" • "Might be" • "May represent" • "May be" • "Versus" • "Somewhat" • "Can be"	• "Likely" • "Apparent" • "Consistent with" • "Probable" • "Definite" • "Compatible with" • "Highly suspicious" • "Presumably" • "Borderline" • "Representing" • "Minimal" • "Thought to be" • "Mild" • "Minor" • "Would favor" • "Subtle" • "Marked" • "slight"

C. Complete only the appropriate questions.

D. Be sure to follow correct skip patterns, i.e., follow form logic.

E. To record dates, fill in 2 or 3 digit numbers for month/day/year. Zero is automatically filled in the data entry system for the left box for any single digit numbers (e.g., 03 for March and 06/08/45 for June 8, 1945). If part of the date is missing, record = for that part. For example, if the only information regarding date is June 1945, record 06/==/45.

F. For all times to be recorded on the HRA form, use 24-hour clock notation. For example:
12:00 pm = Noon = 12:00
12:00 am - Midnight = 24:00

If an exact time cannot be recorded (i.e., is not given in the chart), the best estimate should be given. If a time cannot be clearly estimated, the following guidelines for estimating times may be used in conjunction with the admission time. Use these only as a last resort. For no mention of the time of day, please see xii.

I. 03:00 | The middle of the night
II. 08:00 | Early morning/upon awakening
III. 09:00 | Morning
IV. 10:00 | Late morning
V. 12:00 | Midday OR Noon
VI. 14:00 | Early afternoon
VII. 15:00 | Afternoon or midafternoon
VIII. 16:00 | Late afternoon
IX. 19:00 | Early evening
X. 21:00 | Evening AND/OR last night
XI. 22:00 | Late evening
XII. 12:00 | No mention of time of day
XIII. 12:00 | Noon
XIV. 12:00 | Earlier today OR Noon
XV. 12:00 | Today
XVI. 12:00 | Yesterday
XVII. 22:00 | Symptom at bedtime
XVIII. 2 hours ago | short time
XIX. 18:00 | supper time

G. To record other time frames, use the following guidelines:

$\geq$ 3 days	Several days
$\geq$ 1 day and < 3 days	Few days
$\geq$ 4 hours and < 6 hours	Several hours
$\geq$ 2 hours and < 4 hours	Few hours

"X days postoperative": the first postoperative day is the calendar day after the surgery

"Earlier"	4 hours ago
"This morning" (admitted before 8 a.m,)	6 a.m.

I. For timing purposes, when a patient was out of the hospital but not discharged (eg., weekend pass), events will be considered in-hospital (an extension of the hospitalization).

J. Whenever you have questions about the medical information recorded in the hospital record, consult with your surveillance director.

K. **"Aborted" MI** is not an official medical term. The following probably occurred, there was clinical and ECG evidence of evolving MI or reperfusion was attempted (thrombolysis, angioplasty) or serial ECGs suggested that infarction has not occurred (or was limited?). The HRA implications: history of "aborted MI" qualifies as history of MI (Q19f,Q32); "aborted MI" is equivalent to "acute MI" or "acute CHD" applies to the index event (Q20d, Q24b). The abstractor should abstract as all other events.

L. A guideline for hierarchy
Take information from the history of the resident/Nurse pract/Phys Assist, cardiologist, attending physician, ER physician, or nursing notes/EMS, in that order.

Detailed Instructions for Various Questions

Items 0.a, 0.b and 0.c on this form are primarily for assisting the abstractor in confirming the medical record being abstracted matches the CHI form.

It will be the responsibility of the abstractor to verify, visually, that these key fields match the chart being abstracted.

Hospital, medical record number, and discharge date are stored encrypted because of their confidential nature

0.a. Hospital Code Number. Using the hospital selection drop down list, enter the two digit code assigned to this hospital. If outside the study community, use the appropriate code (96-99). See appendix CC for a list of these hospitals.

0.b. Medical Record Number. Enter the record number from the hospital chart. This number will be found stamped or typed on almost every page of the hospital record. The easiest place to find it is both on the medical record folder and in the upper right/left hand corner of the face sheet. List the number from left to right. Enter only digits and letters; omit dashes and spaces. Do not add zeroes to the right of the number. If the number changes with each admission, use the appropriate number for the one (admission) being abstracted.

0.c. Date of discharge. Date of Discharge (for nonfatal case) or Death. This information will generally be found on the face sheet. Enter the date as mm/dd/yyyy. If the patient died, then record the date of death. If transferred from acute care to rehabilitation or chronic care in the same hospital, count the date of transfer as the discharge date.

17. Patient Disposition on Discharge. This information can be found in the discharge summary or on the face sheet. If the patient died in the E.R., this information can be found on the E.R. sheet. Some hospitals keep a separate log book for deaths.

18. Autopsy. If an autopsy is mentioned in the Death or Discharge Summary, circle "Yes". If not, circle "No".

19. Dead on Arrival. If the patient died outside of the hospital but was brought in dead, he is considered dead on arrival (DOA). If the patient was brought to the ER alive but died in the emergency room, he is an ER death. If admitted to the ward, CCU, or ICU, answer "No".

If a HRA patient is DOA, an ER death, or hospitalized with no vital signs and dies within 24 hours of admission, s/he is treated as an out-of-hospital death. If s/he lived at least 24 hours in the hospital (or did not die), s/he is treated as an in-hospital event.

b-d. First Recorded Blood Pressure, Pulse. First attempt to obtain BP and pulse may be charted on the ambulance sheet, the ER sheet, the clinical graph or the nursing admission note. The pressure may be from sphygmomanometry or an arterial line. If both right and left arm blood pressures are given, take the one with the highest systolic pressure. If the systolic pressure is the same for both arms, record the highest diastolic value. If a BP or pulse range is given, take the highest value given. If the patient was admitted from a doctor's office, use the first BP recorded in the hospital. If the systolic BP or pulse was unobtainable and the patient died

within 24 hours, enter three zeros (000). If the vitals were unobtainable due to technical problems, use the next set of vitals to be the first. If the systolic blood pressure and/or pulse was unobtainable and the patient lived at least 24 hours, enter '001' for systolic BP or pulse appropriately to trigger skip patterns. If no BP or pulse is recorded, leave blank and set the field status to "No Response." If you only have either a BP and or pulse as the first vital sign, enter what values you have and mark other fields of this question as missing and not as 000 or 001.

e. For the event under consideration, was there acute pain anywhere in the chest, left arm or jaw, (this description may also have involved the back or shoulder, on one or both sides) mentioned anywhere in the hospital chart and present within 72 hours of arrival at this hospital, or at the onset of a CHD event beginning in this hospital? Included in this definition for pain are ischemic pain, angina, cardiac and substernal pain. "Chest tightness" "heaviness" or "discomfort" is equivalent to chest pain. Answer unknown if no history either way or no indication at all of timing. If the pain began in the ER but before admission, consider onset as occurring out of hospital.

f. Previous history refers to a time preceding the onset of the event under consideration. For example, a transfer from another hospital should not be considered a "previous event". Historical questions generally refer to before 72 hours prior to admission or documented as long-standing by chest x-ray, echocardiogram, or other diagnostic test. Also review face sheets of all previous admissions for previous MI. If this information states "previous silent MI," "borderline heart attack," "aborted MI," record the answer as "yes". "Aborted MI" is not an official medical term. The following probably occurred, there was clinical and ECG evidence of evolving MI or reperfusion was attempted (thrombolysis, angioplasty) or serial ECGs suggested that infarction has not occurred or was limited. History of "aborted MI" qualifies as history of MI.

Take information from the history of:

1. the resident
2. nurse practitioner or physician's assistant
3. cardiologist
4. attending physician
5. ER physician
6. nursing notes
7. EMS

An abnormal ECG alone, stating "old MI" cannot be used for positive previous history, unless the physician verifies it. Angiogram evidence cannot be taken as evidence unless explicitly verified by the physician. If conflicting information exists in the medical record, base your answer selection on the most reliable source. Statements such as: "No cardiac problems", "No adult illness", "Previously well", and "No previous history of heart disease" are sufficient to answer "No" to previous MI. If no indication either way, answer "Unknown".

g. If a previous myocardial infarction occurred within four weeks of the event under consideration, answer "Yes".

h. Angina. Examine the history for mention of previous angina pectoris or coronary insufficiency prior to this event i.e., > 72 hours before admission). This would include mention of chronic chest pain, ischemic pain, and "history of chest pain". Chest pain specified as being "of unknown origin" does not qualify. Answer "Yes" if the history includes any mention of the patient taking nitroglycerin for chest pain or if the physician notes that the patient has

"substernal pressure, pain, tightness, or burning distress precipitated by exercise or excitement, or both and is relieved by rest and/or nitroglycerin". Answer "No" if the history explicitly states that the patient has no history of any of the above. Answer U = unknown if none of the criteria for "Yes"/"No" responses apply. **Note: Also see item 33**

i. History of other chronic ischemic heart disease, coronary disease, etc. not specified as angina or MI. This includes CHF described as due to coronary disease or ASHD (Atherosclerotic Heart Disease). CHF due to hypertension or other reasons is "No". Arrhythmias are "No".

20. Discharge Statements. Examine the chart, *i.e.*, the discharge summary, ECGs, laboratory reports, transfers, *etc*.

a. This may be answered from the discharge summary, face sheet, or hospital index, whichever is most complete.

d. Mention of acute MI in the discharge summary. Examine the narrative portion of the discharge summary. If there is specific reference to a confirmed or possible acute MI that resulted in this hospitalization or occurred during this hospitalization record "Yes". "Aborted MI" is equivalent to "acute MI" or "acute CHD" and applies to the index event (abstract as all other events). The following are statements consistent with a "Yes" response--"acute cardia ischemia resulting in tissue damage" and "cardiac biomarker consistent with acute myocardial infarction". "Aborted MI" is not an official medical term. The following probably occurred, there was clinical and ECG evidence of evolving MI or reperfusion was attempted (thrombolysis, angioplasty) or serial ECGs suggested that infarction has not occurred or was limited. History of "aborted MI" qualifies as history of MI.

e. (1-4) Streamlining checklist. The purpose of this question is to reduce abstracting time for cases that would certainly be classified as "NO MI" had they had an entire HRA completed. This four part question asks if specific criteria apply to this chart. They require the abstractor to evaluate cohort status, presence of ECG, level of cardiac biomarkers and transfer status. If all four items are answered No, then skip to item 97. If cardiac biomarkers are missing from the chart, record "No" for 20e (3). Answer "No" to 20.e.3. `is any cardiac biomarker above the normal limit' if there is only a single elevated LDH. (Serum creatinine and BNP are not considered cardiac biomarkers for the purposes of this question.) If LDH is the ONLY cardiac marker that makes a case eligible for abstraction, AND the person has cancer, it is OK to skip out. Answer item 20e3 as 'No' for this scenario.

When determining the number of ECGs available for a hospitalization, you may encounter situations where an initial 12 lead ECG is available, but subsequent ECGs come from telemetry or other situations where only 6 lead ECGs are produced. In this type of case the 6 lead ECGs are counted in answering the question 20e.2. The appropriate 6 lead ECG should be selected (last and third) and sent to the ECG reading center. For example, a patient could have an initial 12 lead ECG upon arrival at the hospital, and then subsequently monitored with 6 lead ECGs. The answer to 20e2 would be YES and trigger full abstraction. Cases with only one 12 lead ECG and other 2 or 1 lead rhythm strips would not be sufficient to record Yes for 20e2.

Sometimes the upper limit of normal may be defined as one level (e.g. 0.04 for Troponin), but the patient's result is less than a different upper limit (e.g. <0.05 for Troponin is the lab result). Keep the upper limit of normal as the exact numeric value, but change the patient result to '< [upper limit of normal]'. So in this example, the patient's Troponin would be recorded in the field as '<0.04'. In this case, they enzymes would be considered normal.

Note: Beginning September 2014. For cohorts only, if question 20.e.1. is answered "Yes", and 20.e.2 to

20.e.4 are “No” follow the skip pattern and go to item 56ac to record the serum creatinine lab values.

21. First Recorded Blood Pressure and, Pulse Rate (not during CPR). First attempt to obtain BP and pulse may be charted on the ambulance sheet. If the ambulance sheet is not available, take from the ER sheet, the clinical graph or the nursing admission note in that order. If more than one ambulance or ER is involved, use the first. The pressure may be from sphygmomanometry or an arterial line. If both right and left arm blood pressures are given, take the one with the highest systolic pressure. If the systolic pressure is the same for both arms, record the highest diastolic value. If a BP or pulse range is given, take the highest value given. If the patient was admitted from a doctor's office, use the first BP recorded in the hospital. If the BP or pulse was unobtainable, enter three zeros (000). If no BP or pulse is recorded or BP is obtained by palpitation, leave blank. Note: If pulse or BP were absent and the patient died, this case is to be treated as an out-of-hospital death.
21 d. Smoking Status. Examine the history for any mention of smoking status. If unable to determine if a chart with a positive smoking history is a current or past smoker, record "smoker NOS (not otherwise specified)". For the purposes of this question do not attempt to distinguish between cigarette, pipe or cigar smoking. If a Current smoking status is indicated in the chart as "non smoker" but no history is mentioned then record as N "never smoker". If the record indicates patient quit smoking less than or equal to 1 week prior, consider as current smoker. If the patient quit greater than 1 week, consider as past smoker. Chewing tobacco only record ‘N’ for "never smoker".

22. Discharge Summary Transcribed: Copy the Discharge Summary. If no Discharge Summary, copy the cardiac Consult and last physician progress note. If no Cardiac Consult, copy the H&P. This question ought to be always answered “Yes”.

Not restricted to 72 hours

23. a. Acute Cardiac Symptoms. Check the admission history, etc., for mention of the beginning of acute cardiac symptoms which brought the patient to seek medical attention. Examples of cardiac or CHD symptoms are: chest pain, collapse, syncope, shortness of breath, upper gastrointestinal symptoms such as indigestion or nausea, palpitations, throat tightness, pain in the neck, left arm, and sternum and sudden death. Chest tightness, discomfort, squeezing or heaviness is equivalent to chest pain. Marked fatigue and shortness of breath may be considered acute cardiac symptoms if the chart seems to indicate this. If the symptom includes one of these but is obviously noncardiac (e.g. chest pain from pneumonia, nausea from pancreatitis), answer "No". If a patient came in for a scheduled procedure (such as pacer battery replacement), but reported acute cardiac symptoms prior to arrival, then the symptoms should be considered acute symptoms. In cases where a patient collapses during a stay and had no other acute cardiac symptoms, consider the collapse a symptom (answered "No, after arrival") and it should be treated as an in-hospital event. Additionally, if the patient never reported pain or discomfort before the collapse and did not recover, 25a is "Unknown". Neurological syncope or dizziness is "No acute cardiac symptom".

Sometimes, as in cases with chronic angina, there may be no acute symptoms. If there were no acute symptoms, change in symptom quality or frequency such as new unstable angina), or symptoms were only chronic, do not answer "Yes". The symptoms must have begun outside this hospital to answer "Yes". There is no three day limit on the answer to this question, and it is not limited to chest pain. The symptoms must have begun outside this hospital to answer "Yes". For determining the location where symptoms occurred, count the ER as out-of-hospital and the doctor's office as out-of-hospital. If this is a transfer from another hospital, acute symptoms before that hospitalization or in that hospital count as "Yes", because they occurred prior to arrival at this hospitalization.

If a perioperative MI (MI that occurs during the operation or immediately following), answer "No acute cardiac symptoms."

If patient is admitted with chest pain because of atrial fibrillation question 23a should be answered "YES."

If a patient has procedure-induced chest pain during an elective catheterization which necessitates admission question 23a should be answered "yes" because pain is not expected during a catheterization.

Pain induced for balloon inflation or angioplasty (if temporary), should be answered "No".

b. Timing between onset and hospital arrival. (see also the timing table on page 1)
The main purpose of this item is to obtain an estimate of the time delay between the onset of the symptoms and arrival at the hospital. We are interested in care-seeking behavior in response to symptoms (most often, chest pain, but could be other symptoms that prompted the patient to take action).

Estimate the time to the best of your ability (refer to instructions for time expressions in General Instructions, item 7). If there were multiple new episodes of symptoms (e.g. chest pain), you must pick the likely onset which would be the first or most severe depending on the circumstances. In the case of someone with documented coronary disease or chronic angina, it is a change in the pain, prompting action, which usually marks the onset of an event. Stuttering pains (growing stronger and weaker) and recurring pains (frequent pains back to back) should generally not be taken as separate events unless it is clear that they are such (i.e., they went away for a good while before returning). Consult your surveillance director when in doubt. You may consider onset time on EMS notes or ED notes; pick the best quantitated time - … "hours or …minutes"--instead of qualitative – "last night or morning of" - per hierarchy.

For timing of onset, if the time of EMS arrival is clearly specified, then it should be preferred over hierarchy guidelines.

If the patient has no history of angina or coronary disease and develops new chest pain, the onset time of event depends on the course of symptoms. If a single pain stays relatively constant until hospitalization, the Time of this first pain is the onset. If the pain remits but later another occurs that is suddenly severe, prompting hospitalization, then this severe pain is the onset.

If wording in the chart refers to "days" (e.g., chest pain for 4 days), count today as day 1 when counting backward to estimate duration. If wording in the chart is "days ago" (e.g., chest pain started 2 days ago), ignore today when estimating duration.

Table of Onset for Out of Hospital Chest Pain Scenarios

Description	***Onset is:***
Single pain of **constant** intensity leading to care	Start of pain
Single pain increasing or decreasing in intensity leading to care	Start of pain
One or more pains that go **totally** away, then another pain (of any intensity) leading to care	The pain leading to care
Single pain that lessens or waxes and wanes (alternates stronger to weaker)but never totally goes away. Pt seeks care because it seems worse or finally had enough.	Start of pain
First severe pain that totally goes away and then a few days of less severe pains, none more prominent. Pt seeks care because finally had enough.	Start of pain

Pain for hours or days, not otherwise specified	Start of pain
Stuttering pain for hours or days, not otherwise specified	Start of pain if seemed continuous. Otherwise, pain leading to care.
Pt has typical angina most days; pain gets more severe, leading to additional care	Pain leading to additional care
Pt has typical angina most days (no change) but is hospitalized for evaluation	Last pain before hospitalization

24. a. Primary Diagnosis - Admission. If the patient had no pre-hospital cardiac symptoms (Item 23a), check the admit note or admission sheet diagnosis for the primary reason for admission. If a patient is admitted for elective angioplasty, consider this an "other non-acute CHD evaluation" (C).

TIA = "O"
Elective cardioversion = "O"
Valve replacement = "O"
Permanent placement pacemaker = "O"
EP studies, elective = "C"

b. In-hospital CHD Event. Check the ER sheet, admit note, and history for reference to when the CHD event took place. CHD events in hospital of interest include new infarction, new acute ischemia**,** reinfarction (including a documented MI "extension" or "aborted MI"), enzyme leak, or enzyme rise, but not procedures (such as CABG) or death. Also of note as an event is "primary chest pain" - acute chest pain happening for the first time during a hospitalization and prompting additional procedures. For example, if a patient was admitted electively and develops ~~chest pain~~ new cardiac symptoms during the hospitalization, this should be considered a possible in-hospital event.

An answer of "No, After Arrival" to Item 23a does not mean that this question will automatically be answered "Yes". A patient could experience chest pain, shortness of breath, or other symptoms as a continuation of an event begun outside the hospital. Mere continuance of symptoms is not an in-hospital event; nor is the occasional occurrence of a chronic anginal pain. An event should be definitely identified on the medical record as new infarction, new acute ischemia**,** reinfarction, or fit the above definition of primary chest pain.

c. Date of In-hospital CHD Event. If more than one, pick the primary or most important, as described in the Note below.

[NOTE: A problem arises with subsequent questions if the patient had multiple CHD events before and/or during the same admission. (For example, multiple events would occur if a person was admitted for acute angina, recovered, but infarcted before discharge; or if a patient was admitted for an MI, then reinfarcted.) In the case of multiple events, the abstractor must decide which is primary or most important, based on severity, biomarkers, physician notes, etc. In the case of angina followed by infarction, the most important would be the infarction. With a first infarction, then reinfarction or extension, the first infarction is considered primary. If two events seem equal, pick the first. When in doubt, consult your supervisor. Answer subsequent questions for the most important event. If a patient has acute symptoms which can be identified as an event and subsequently has a cardiac arrest, this should be treated as one event. In this case, the arrest is a complication of the first event. Likewise, after a myocardial infarction, additional episodes of pain which do not lead to a new MI are not to be considered new in-hospital events.

Only new and separate infarctions, as determined by the physician, should be considered second events. For example, a person could have been admitted for an inferior myocardial infarction, and the day before discharge suffer a new anterior myocardial infarction. In summary, symptoms and signs that are complications or a continuation of a first MI should not be considered as a second event.]

25. a. Onset of Acute Pain Within 72 Hours.
For the event under consideration, was there acute pain (tightness, heaviness, discomfort) anywhere in the chest, left arm or jaw, (this description may also have involved the back or shoulder, on one or both sides) mentioned anywhere in the hospital chart and present within 72 hours of arrival at this hospital, or at the onset of a CHD event beginning in this hospital? Onset of event means onset of chest pain or other symptom. Included in this definition for pain are ischemic pain, angina, cardiac and substernal pain. If pain was chronic and/or no acute episode was evident (eg., perioperative MI), skip to Q. 26. Answer unknown if no history either way or no indication at all of timing. If the pain began in the ER but before admission, consider onset as occurring out of hospital. Be sure to record chest pain within the 72 hours, even if this is a transfer. General rule about chest pain: If there are conflicting reports about whether chest pain occurred, record your best impression as to whether it was present, absent, or unknown. Do not record yes just because one provider said chest pain was present, if the preponderance of evidence suggests no chest pain.

NOTE: See Appendix DD for examples of how Items 23 and 25 should be answered for typical cases.

25. b. Date of Onset of Pain. This question is only reached if there was acute chest pain or equivalent within 72 hours prior to hospitalization or to an in hospital event. The date entered for the onset therefore must be within that 72-hour window. If the pain started more than 72 hours prior and continued, enter the earliest date within 72 hours. If the pain was intermittent, (i.e., came and went and came and went) then pick the most prominent pain in the last 72 hours. If intermittent and none seems more prominent, then give the date of the start of the first episode within 72 hours prior to arrival at the hospital or onset of the in-hospital event.

If wording in the chart refers to “days” (e.g., chest pain for 4 days), count today as day 1 when counting backward to estimate duration. If wording in the chart is “days ago” (e.g., chest pain started 2 days ago), ignore today when estimating duration.

c. Chest location. Indicate specifically if pain involved the chest (yes) or did not (no). If not mentioned either way, answer "unknown".

d. Noncardiac pain. This question is asked to determine if the pain experienced satisfies the ARIC criteria for chest pain by establishing that there is no definite non-cardiac cause of chest pain. It refers to the final conclusion about a pain or discomfort, not the "rule-out" diagnosis. Only specific diagnoses of conditions or diseases made by an M.D. or D.O. to account for the pain in question should be recorded here. The pain may result from an old diagnosis, rather than a new one. Answer "Yes" if there is an explicit statement by a physician that the pain is definitely due to a non-cardiac cause. If yes, specify the diagnosis of what the pain was due to. Examples could be: fractured ribs, costochondritis, esophagitis, or an acute gallbladder attack. Pericarditis should be answered as "yes" and specified. A charted impression "R/O (rule out) fractured rib" should not be recorded as a "Yes" answer. The answer "No" is to be used when an explicit statement that the pain is definitely cardiac (e.g., cardiac tamponade). If patient is admitted with chest pain because of atrial fibrillation question 25d should be answered “no.” It is acceptable to say yes, non-cardiac, if (a) there is no evidence that the chest pain was from heart disease and (b) there is a condition present that likely caused the chest pain (e.g., PE, musculoskeletal issue, etc).

If neither a clear positive or negative statement is available, answer “U".

When in doubt, ask the Surveillance Director. (Note: It is preferable, when in doubt, to specify the cause so that the true answer can be determined later.)

e. Specify as described above. If a specific cause is not noted, write “non cardiac chest pain.”

f. Death in Hospital. Look in discharge summary or on death record for whether or not the patient died in the hospital.

g. Timing of Death. Estimate time from onset of acute symptoms (defined in previous questions) and death.

26. a. Reperfusion refers to complete or partial restoration of coronary blood flow by coronary angioplasty, coronary atherectomy, coronary artery bypass graft (CABG), or thrombolysis using intracoronary or intravenous streptokinase, urokinase, anistreplase, APSAC, or tissue plasminogen activator (TPA). Check procedure notes, EMS, ER notes, and medication lists. (See Appendix BB for drug information.) It must occur within 24 hours of onset of acute event (not necessarily the first symptom). Onset of event means onset of chest pain or other symptom. Answer "Yes" even if reperfusion was unsuccessful. Note: The timing is not necessarily the same as that recorded by the physician. Answer “No” to reperfusion for Transmural Myocardial Revascularization (TMR).
Angiomax during PTCA is a reperfusion agent.

For transfers, answer "Yes" if reperfusion given in first hospital within 24 hours after onset, but in this case 29.h. is answered "No".

b. Record time between event (acute symptoms) and onset of reperfusion (intracoronary or intravenous) attempt. Onset of event means onset of chest pain or other symptom. To determine onset of CABG reperfusion, check anesthesia record for time patient place on bypass. IF PTCA, take first balloon inflation as the time of reperfusion attempt. If unclear regarding two times, take the longer. If no timing at balloon inflation is available use the time the patient went into the cath lab.

27. CCU/ICU. Check discharge summary or progress notes for any admissions or transfers to the CCU or ICU or a telemetry bed. Coronary care units (CCU) and intensive care units (ICU) are dedicated areas so assigned by the hospital administration. Notes designated as written while the patient was in one of these units is evidence of admission. Telemetry includes less intensive but continuous cardiac monitoring. In the case of a hospital that does not have either CCU or ICU or telemetry, mark the answer as "No".

28. For this question, not recorded = "No". Record findings in this hospital, which refers to any time after arrival of EMS. If a transfer, do not record findings at the previous hospital.

a. Shock. Cardiogenic shock (pump failure) is failure to maintain blood supply to the circulatory system and tissues because of inadequate cardiac output, i.e., faulty valves and/or faulty muscle action. A person in shock cannot maintain blood pressure or perfuse organs. The administration of Dopamine is a clue, but not definitive evidence that a patient had shock or pump failure. Look for the term "shock" or "pump failure". Answer "Yes" if shock occurred at home, at the ER or hospital or during the hospital stay. Septic shock = "No". Shock not otherwise specified answer “Yes.” Shock due to non-cardiac causes is “NO”

1. Note if a physician documented shock as being present during this admission within 24 hours of this event onset of symptoms.

Note: For 28.a.1., 28.b.1., and 28.e.1. If there is a clear onset of the condition then use 24 hours since onset. If there is not a clear onset, then use date of admission and determine if within 24 hours.

b. Congestive Heart Failure or Pulmonary Edema. CHF is an inability to adequately maintain cardiac output, but not as severe as shock. Pulmonary edema is fluid in the lungs due to poor cardiac output. Check the physical exam, ER sheet, admission diagnosis and history, and x-rays. If the timing is not clear, record "Unknown". This question should be answered yes if the patient currently is in HF, but "no" if s/he has only a history of HF or chronic stable HF. (See table)

No	YES
• Pulmonary edema due to malignancy • Slight, minimal or mild pulmonary/ congestion • Fluid overload • Mild CHF	Definite or probable: • pulmonary edema • pulmonary congestion • biventricular failure • CHF noted on x-ray or autopsy • cardiac failure • "Mild to moderate" pulmonary edema or CHF • vascular congestion • Cardiogenic shock

1. Note if a physician documented CHF as being present at time of event and/or on arrival record as "YES". If new onset of CHF occurs within first 24 hours of this event in a patient with chronic CHF, record "Yes".

c. S3 Gallop (third heart sound). Also known as ventricular or summation gallop. This would be recorded in the physical exam notes or progress notes. Do not consider S_4 (atrial gallop) as equivalent. Nonspecific gallop = "No".

d. Rales. This can be taken from physician's or nurse's notes. If the patient had rales (moist or widespread, not basilar (lower lobe) alone), record this as a "Yes". Rales are also called "crackles" or "crepitations". Rales are considered present if there are $\geq$ "1/3 of the way up" noted by a physician or noted by a nurse on a day when a physician does not comment on the pulmonary exam. A "few rales" or "scattered rales" is "No". Fine, diffuse, some or slight rales $\geq$ 1/3 up is "Yes".

No	**Yes** (if not just basilar)
• expiratory crackles • faint rales • rales that clear w/ cough • tubular breath sounds • Basilar rales (only) • Scattered • Few	• inspiratory rales • dependent rales • inspiratory crackles • musical rales • Rales • hilar rales • upper lobe rales • rales up to axilla • wet or moist lungs • fine, diffuse, slight greater than equal to one third up.

e. Ventricular fibrillation. Chaotic contraction of heart resulting in cardiac arrest, sometimes reversible by electrical defibrillation. Documentation usually in progress notes, arrest record, or discharge summary. Record in Q30. Ventricular flutter = "No." Hospital stay starts when EMS arrives on scene, "at home" is before EMS arrives on scene.

Cardiac arrest. Cessation of effective heart pumping due to ventricular fibrillation or asystole. Would prompt cardiopulmonary resuscitation or death. Documentation would be found in progress notes, arrest record, or discharge summary. Respiratory arrest alone = "No". Ventricular tachycardia with no blood pressure = "Arrest". Location of arrest is defined as the entire process, not the onset. For example, if CPR stars outside the hospital but continues after arrival, answer "Yes." If the patient has an arrest and begins to recover before arrival, then answer "No."

Asystole. Complete cessation of heart beat, resulting in cardiac arrest. Documented usually in progress notes, arrest record, or discharge summary. Sinus pause is not asystole. Every person who dies = "Yes".

Induced cardiac arrest/asystole via cardioplegia during a procedure = “No”.

1. Note if a physician documented cardiac arrest as being present during this admission within 24 hours of this event. If the event started as a cardiac arrest, answer "Yes."

f. Pulmonary embolus. Blood clot to lung impairing oxygen exchange to blood would be documented in progress notes, discharge summary, lung scan, or pulmonary arteriogram or autopsy.

g. Stroke. Synonyms are cerebrovascular accident (CVA), cerebral hemorrhage, cerebral infarction, cerebral thrombosis, subarachnoid hemorrhage. Documented in progress notes, discharge summary, or CT scan. Stroke syndrome = "Yes". SAH = "Yes". Do not take TIA. A TIA (as opposed to a stroke) is the temporary loss of a function for less than 24 hours = No.

h. Pneumonia. Documented in progress notes, discharged summary, or chest x-ray. Synonym = pneumonitis. Radiation pneumonitis = "No".

29. Special Procedures. Check the physician notes on procedures and the laboratory reports for the following procedures during the present hospital stay. If the procedure was mentioned but time

course cannot be determined, mark "U". (If a transfer, do not record procedures at the previous hospital unless a patient is transferred with a Swan-Ganz catheter and/or a Balloon pump). Consider the Swan-Ganz a monitoring procedure. Thus, although the catheter may have actually been inserted at the first hospital, if it remains in place for monitoring procedures, answer 29.d. "Yes". Check for operations and procedures codes at the bottom of the face sheet. These codes may appear without a language description of the operations and procedures. If this is true, the codes will have to be translated in order to circle the appropriate procedures. For definitions and descriptions of each of the procedures and ICD procedure codes and the "other" category, please refer to Appendix AA.

a. Cardiac Catheterization – See Appendix AA

b. Coronary Angiography- See Appendix AA

c. Coronary angioplasty-
   - If coronary angioplasty <u>was attempted</u> and completed, "yes" should be answered even if the procedure was not successful in reducing the lesion or increasing blood flow.
   - If angioplasty was attempted, but for some reason the physician <u>cannot get to the lesion</u> because of some complication, then the answer is "No".

   c1. Time from onset of event- How soon after the event did the angioplasty occur.

   c2. Coronary atherectomy - If atherectomy appears in the course of a CABG, read through the reports; it can be part of a PTCA procedure. Synonyms include TEC: Transluminal Extraction Catheter; DCA: Directional Coronary Atherectomy. Note: enadarterectomy = atherectomy and atherotomy = angioplasty

   c3. Time from onset of event- How soon after the event did the atherectomy occur.

d. Swan-Ganz catheterization"- If the Swan-Ganz catheterization is used for diagnostic pressure during a cardiac catheterization and then removed, answer “No”. If the chart is unclear whether a Swan-Ganz was left in after a cath, but pulmonary capillary wedge (PCW) pressures were recorded, answer yes.

e. Echocardiography -record transesophageal ECHO as ‘Yes’. If a stress echo test is performed, record “Yes” to 29.n. and “Yes” to 29.e.

f. Coronary bypass surgery- bypass surgery is <u>not</u> necessarily automatic for mitral valve replacement/repair.

   f.1. Time from onset of event- How soon after the event did the CABG occur.

g. Intracoronary reperfusion - If reperfusion was attempted and completed, "yes" should be answered even if the procedure was not successful in reducing the lesion or increasing blood flow.

h. Intravenous reperfusion - If reperfusion was attempted and completed, "yes" should be answered even if the procedure was not successful in reducing the lesion or increasing blood flow.

   h.1.Time from onset of event- How soon after the event did the intracoronary (29.g.) or intravenous 29.h.) reperfusion occur.

i. Aortic balloon pump- See Appendix AA

j. Radionucleide scan of the heart -if multiple tests, include each separated by a slash.

k. If yes, what type

l. Item deleted

m. MRI scan of the heart MRI scan of heart Record YES if a cardiac MRI was performed during this hospitalization. A cardiac Magnetic Resonance Imaging (MRI) is a noninvasive imaging test of the heart which can provide an exact measurement of the left and right ventricular ejection fraction. Synonyms for this test include “cMRI”, “cardiac Magnetic Resonance”, “cardiac MR”, “cardiac Magnetic Resonance Angiography”, “cardiac MRA”, or “cardiac MRI/MRA”. Note: the MRI scan of heart only looks at the function and perfusion of the heart and not whether ischemia can be provoked.

n. Exercise stress test- a pharmacologic stress test should be considered as ‘Yes’. Abbreviate, as necessary. Answer YES if the person has Persantine or other pharmacologic stress test. (See Appendix 29.j., pg 25.

o. Holter monitoring- See Appendix AA

p. Pacemaker -includes either temporary or permanent placement. Pacemaker wires are considered "Yes".

p.1. Coronary stent -Record “yes” if a coronary stent was placed any time during this hospitalization. Placement of multiple stents counts as “yes”. A coronary stent is a physical device inserted into the lumen of a coronary artery to establish and/or maintain patency of a vessel for the purpose of revascularization of tissue distal to the stent. If the physician attempted to place one or more stents and was unsuccessful in completing the procedure record “no”. The letters “PCI” for primary coronary intervention can refer to a stent, angioplasty or other intervention. However, if a stent is used the word stent should appear in the description. Names for different types of stents may be found in the medical record. These include but are not limited to the following: Mesh stents, Slotted-tube stents, Coil stents, Multidesign stents, and bioabsorbable stents. Coronary stent also includes drug eluting stents stent, angioplasty or other intervention.

p.1.a. Time from onset of event- How soon after the event did the placement of the coronary stent occur.

p.2. Implanted defibrillator -Record “yes” if a cardiac defibrillation device was implanted in the patient at any time during this hospitalization. If a defibrillator was placed and subsequently removed during this hospitalization record “no”. If the physician attempted to place a defibrillation device and did not successfully complete the procedure record “no”. A defibrillator is a device that monitors the rhythm of the heart and if ventricular fibrillation is detected will deliver a series of electric impulses designed to “shock” the heart back into normal sinus rhythm. The defibrillators may be referred to by a variety of names such as automatic implantable cardioverter defibrillator, AICD, or an implantable cardioverter defibrillator (ICD). The defibrillators should be obvious as each implant will have a product label in the chart with the name of the company and the model and number. When in doubt, contact site MD.

p.2.a. Time of event –How soon after the event did the implantation of the defibrillator occur.

p.2.c. Coronary CT- Record “yes” if a coronary CT was performed. This includes indication that a multi-slice cardiac computed tomography angiography (CTA) was performed (also referred to as a “64-slice multi-detector coronary CTA”. If a computer tomography (CT) or electron

beam computer tomography (EBCT) was performed solely to assess coronary calcium, record "no".

p.2.d. MRI stress test – Record "yes" to if a magnetic resonance imaging (MRI)stress test was performed. This test can also be referred to as "cardiac magnetic resonance (CMR). stress test". A stress test is a noninvasive cardiac test to assess for active coronary ischemia or coronary blockages by stressing the heart using either exercise (exercise stress test) or medications (pharmacological stress test). Stress tests can be done using echocardiography ("stress echo", "dobutamine stress echo"), nuclear imaging ("nuclear stress test"), or cardiac MRI ("cardiac MR stress test"). Note: MUGA or RNV is not a nuclear stress test. This test may be performed before, during, or after either exercise stress or dipyridamole/adenosine infusion to stimulate the effects of exercise.

q. Other :An angiojet is a device to "vacuum up" a clot at the site of an angioplasty or stent. If there is a large clot at the site it is very difficult to do the stent/angioplasty and this allows them to do it in one procedure instead of anticoagulating the pt and having him/her return days later. Do not include in 29.Q. Include under "Other" coronary calcium assessment by helical CT or EBLT (electron beam computer tomography). See Appendix 29.Q.

30. a. Closed chest massage or cardiopulmonary resuscitation (CPR). This question has two aims: (a) to support or dispute diagnoses of definite myocardial infarction based on chart abstracts, and (b) to inquire after medical care delivery. CPR is defined as a basic emergency procedure for life support, consisting of artificial respiration and manual external cardiac massage. It is used in cases of cardiac arrest. Cardioversion is defined as the use of direct current counter shock through paddles to restore the heart's normal sinus rhythm during cardiac arrest. (Cardioversion may be used in treatment of atrial fibrillation and arrhythmias. Cardioversion for atrial fibrillation. done electively is "NO", done emergently is "YES") Record "Yes" if there is firing of an implanted defibrillator. Refer to the EMS, ER, ICU/CCU, ward notes, CPR or cardiac arrest sheets. When there is precordial thump, the response should be "Yes". When cardioversion is part of CABG or EP studies, the response should be "No". Record Artificial respiration alone = "No". This question should be answered "yes" for internal (or open chest) cardiac message. Question 30a should be answered "yes" if more than one shock is administered during CABG as this should be considered cardioversion.

30. b. Date of CPR/Cardioversion. List the date of the first emergency cardioversion or CPR attempt for this event.

c. Location. Indicate where first CPR and/or cardioversion was started.

31. Drugs used during hospitalization. Refer to Appendix BB for definitions of nitrates, calcium channel blockers, beta-blockers, digitalis, ACE inhibitors, intravenous heparin infusion preparations, antiplatelet agents. Review the hospital medication record and discharge note to see if any of these were given during the hospital stay or at discharge. If a generic or trade name is listed, record as "Yes." If the medication is not listed, record as "No."

No	Yes
• Ordered but not given • Not initialed • Zero next to med • Lidocaine as local anesthetic • Medication "On Hold"	• Given during hospitalization • All discharge meds • In-hospital medication sheet • Initialed and dated

- Always include a review of cath lab report and operating room report for medications.
- If there is no drug list on the discharge summary, but the physician states in discharge summary "Resume Home Meds", assume that discharge medicines are the same as home/pre-hospitalization medicines.
- A drug must be listed on the ER sheet/medication sheet, initialed and dated.
- Nicardipine (a calcium channel blocker) is given only one-time intra coronary during cath/PTCA answer 31b. record "NO. "
- If you see an oral anticoagulant which appears on the list in Appendix BB, record "YES" to 31f.

31.i. **IV Heparin** – (See table below) used briefly as part of the administration of procedures, such as a one-time bolus before or during the procedure or infusion is less than 5 minutes total, should be considered "No" to intravenous Heparin. Heparin infusion more than 5 minutes or more than a one-time bolus should be considered as treatment and answered as "Yes". Administration of subcutaneous heparin, Heplock, or heparin flush should not be considered as intravenous heparin infusion and should be recorded as "No" for HRAF 31i. Recording "No" for 31i when heparin is given subcutaneously applies only to HRAF31i. When other meds are given subcutaneously, this should be recorded as "Yes". Subcutaneous infused Lovenox should be considered as "YES" to HRAF31i. IV administered HIRUDIN should be considered as "YES" to HRAF26a, AND HRAF29g or HRAF29h. If IV HEPARIN is administered during this hospitalization, record "Yes" to HRAF31i.

IV Heparin

No	Yes (considered as treatment)
• One-time bolus • Infusion <5 minutes • Subcutaneous Heparin • Heplock • Heparin flush • IV Heparin for dialysis	• More than one bolus • Infusion > 5 minutes • Subcutaneous Lovenox • IV Heparin • IV Hirudin

For question HARF31j, a Persantine dual isotope stress test is not an antiplatelet agent.

Nitrates administered intracoronary during a catheterization are "yes" to 31a. Except noted above, medications given during procedures can be recorded as "YES".

31 k. Glucose, insulin, potassium infusion:

A glucose, insulin, potassium infusions (sometimes abbreviated GIK infusion) is a special procedure to limit infarction size. It's given as a continuous infusion through a vein. This procedure would be identified from the orders or the progress notes and it might be seen with orders such as GIK infusion or protocol, glucose insulin potassium or some other indication in the orders of insulin infusion plus glucose and potassium. However care must be taken to differentiate GIK for myocardial infarction and the use of infusions to treat other conditions. For example insulin infusions are used to treat diabetes and glucose infusions are routine in the CCU. Also many patients need intravenous potassium due to hypokalemia. Infusions of glucose, insulin, and potassium can also be given in conjunction with CABG surgery. If given only as adjunctive therapy to CABG record "no" to 31k.

31 l. Lipid lowering medications (statins, niacin, other)

Medications designed to lower either total serum cholesterol or low-density lipoprotein cholesterol

(LDL) may be given during the hospitalization or at discharge. Refer to Appendix BB for names of lipid lowering medications. Often these medications are started before hospitalization and then continued after discharge. If lipid lowering medications are not initiated but continued then record "yes".

32. History of Previous MI. **Previous history refers to a time preceding the onset of the event under consideration.** For example, a transfer from another hospital should not be considered a "previous event". Historical questions generally refer to before 72 hours prior to admission or documented as long-standing by chest x-ray, echocardiogram, or other diagnostic test. Take information from the history of the resident, cardiologist, attending physician, ER physician, or nursing notes, in that order. For transplanted heart, use the history of the individual, not the history of the heart. Also review face sheets of all previous admissions for previous MI. "Unequivocal" not open to doubt or misunderstanding.

Answer "Yes":

- If this information states "previous silent MI", "borderline heart attack", history of "aborted MI" record the answer as "yes".
- An old MI noted on the autopsy is recorded as "Yes"; if only acute, record as "no".

Answer "No":

- An abnormal ECG alone, stating "old MI" cannot be used for positive previous history, unless the physician verifies it by mentioning it in the discharge summary, progress note, or history/physician notes.
- Angiogram or other imaging findings cannot be taken as evidence unless for previous MI explicitly verified by the physician.
- The question is answered "No" if there is specific mention of no previous MI. (See Appendix GG)
- If conflicting information exists in the medical record, base your answer selection on the most reliable source. Statements such as: "No cardiac problems", "No adult illness", "Previously well", and "No previous history of. heart disease" are sufficient to answer "No" to previous MI.
- If there is good documentation of a patient's history, the abstractor can answer "No," even if an MI is not specifically stated.
- "Aborted MI" is not an official medical term. The following probably occurred, there was clinical and ECG evidence of evolving MI or reperfusion was attempted (thrombolysis, angioplasty) or serial ECGs suggested that infarction has not occurred or was limited.

Answer "Unknown":

- If no indication either way (an old MI is not mentioned, regardless of what is said about chest pain), answer "Unknown".
- "Essentially unremarkable history" should be answered as "unknown".

33. Angina. Examine the history for mention of previous angina pectoris-diagnosed **prior** to this event.

Synonyms for angina are "coronary insufficiency" or "angina equivalent" or "cardiac pain" or "ischemic chest pain". These do not require the presence of NTG to answer yes for angina

Answer "Yes":

- For mention of anginal pain or ischemic pain.
- Angina equivalent" and "silent coronary ischemic" are recorded as "Yes."
- Answer "yes" if patient has a positive history of angina but is currently pain free.
- "Artery spasm" on angiography with chest pain = "Yes"
- Answer "Yes" if the history includes any mention of the patient prescribed or taking nitroglycerin for chest pain or if the physician notes that the patient has "substernal pressure, pain, tightness, or burning distress precipitated by exercise or excitement, or both and is relieved by rest and/or nitroglycerin". This does not include nitroglycerine prescribed for another person.
- Has currently active prescription for any nitrates/NTG and has a history of any of the following: MI, CHD, CAD or chest pain.

Answer "No":

- If the history explicitly states that the patient has no history of "substernal pressure, pain, tightness, or burning distress precipitated by exercise or excitement, or both and is relieved by rest and/or nitroglycerin".
- If there is no history of MI or cardiac disease and chest pain has never been diagnosed as angina, answer "No".
- Prescribed NTG is insufficient by itself to be called angina.

Answer "Unknown":

- Chest pain specified as being "of unknown origin" or undiagnosed is "unknown.
- Answer "U" = unknown if none of the criteria for "Yes"/"No" responses apply.
- If a patient has a history of CABG and/or PTCA, but no mentioned history of angina or MI, question 33 should be answered "unknown" and then specified in question 34.

34. Other Chronic IHD. History of other chronic ischemic heart disease, coronary disease, etc. not specified as angina or MI. This includes CHF, and ischemic cardiomyopathy, or arrhythmia described as due to coronary disease or ASHD (Atherosclerotic or Arteriosclerotic Heart Disease). If there is no mention of ASHD, coronary insufficiency, coronary or ischemic disease, the answer is generally "No". CHF due to hypertension or associated with an MI, or CHF that is non-chronic or due to non-ischemic reasons is "No". Arrhythmias are "No". CHF not otherwise specified **does not** equal CHD; i.e. CHF not otherwise specified = "No". ASCVD may be taken as "yes" unless the physician is obviously referring to ASCVD in other vascular beds (e.g. brain, leg). If in doubt, specify, and consult your Surveillance director. Skip 34 if 32 or 33 is answered "Yes". Asymptomatic CAD that is detected by screening tests, performed in the past, requires this question to be answered "yes."

35. History of valvular disease or cardiomyopathy as rheumatic heart disease, mitral valve prolapse, valvular stenosis or regurgitation? Review echocardiogram and cardiac catheterization reports, as well as the history. The new discovery of valvular disease by echo or angiogram can only be taken as "Yes" if confirmed as long-standing by the physician. Other valvular diseases include: **Aortic Valve** diseases or disorders, aortic valve incompetence, insufficiency, regurgitation, or stenosis, aortic valve failure; **Mitral valve** diseases, disorders, mitral valve incompetence, insufficiency, regurgitation and stenosis or mitral valve failure; or **Pulmonary valve** diseases, disorders, incompetence, insufficiency, regurgitation and stenosis; and **Tricuspid valve** diseases, disorders, incompetence, insufficiency, regurgitation, stenosis and failure. In addition, any mention of valvular endocarditis or the above

mentioned in an autopsy warrants an answer of "Yes" to history of valvular disease. Not recorded, trace, trivial, or 1+ regurgitation as seen on ECHO or catheterization is recorded as "No".

History of valvular disease.

a. May be taken from autopsy or old ECHO.
b. Valvular sclerosis - generally "No" unless supported by symptoms.
c. If symptomatic and longstanding, and noted on present admission, "Yes" for history. If incidental on cath/ECHO, minimal or mild = "No".
d. IHSS = "Yes". (Idiopathic hypertrophic subaortic stenosis.)
e. Redundant valve = "No".
f. Mitral annular calcification = "Yes".

History of cardiomyopathy. Types of cardiomyopathies include: Alcoholic cardiomyopathy, Amyloid cardiomyopathy, Beriberi cardiomyopathy, Congenital cardiomyopathy, Congestive cardiomyopathy, Constrictive cardiomyopathy, Endomyocardial fibrosis, Endomyocardial fibroelastosis, Familial cardiomyopathy, Hypertrophic cardiomyopathy, Idiopathic cardiomyopathy, Ischemic cardiomyopathy, Metabolic cardiomyopathy (Cardiac glycogenosis, Gouty tophi of the heart, and Mucopolysaccharidosis cardiomyopathy). Additional types of cardiomyopathies may be listed as: Nutritional, Obscure Cardiomyopathy of Africa (Becker's Disease), Obstructive, Postpartum, Secondary (Sarcoid or other), Tuberculous or Thyrotoxic cardiomyopathies. Not recorded is "No". Hypertensive and dilated cardiomyopathy = "Yes".

36,37. Coronary bypass or angioplasty. Has the patient had previous coronary bypass surgery or coronary angioplasty (CABG) before this event (refer to Appendix AA for definitions)? CABG or angioplasty related to the acute event under consideration should be recorded under 26., not here. Not recorded is "No". Record a "Vineberg" as "Yes". An unsuccessful PTCA in the past is "Yes" for history of angioplasty. Please record "Yes" for history of angioplasty if there is a history for atherectomy. Bypass surgery is not necessarily automatic for mitral valve replacement/repair.

38. a. Hypertension previous to this admission? If there is explicit mention of hypertension (high blood pressure) including labile hypertension as being present, answer "Yes". If hypertension history is explicitly recorded as negative, or "no known cardiac risk factors", answer "No". If no mention either way, record "U". Even if the patient is on a medication sometimes used for hypertension (e.g., beta-blocker), but hypertension is not mentioned, answer "U". "Borderline" or "mild" hypertension = "Yes". Hypertensive cardiovascular disease = "Yes". Pulmonary hypertension = "No".

38. b. Examine first the discharge summary and diagnoses, then the history and progress notes, for mention of either history of diabetes mellitus prior to or diagnosed during this event. This includes mention of "diabetes," "diabetes mellitus or DM," "insulin dependent diabetes (mellitus) (IDDM)," "non-insulin dependent diabetes (mellitus) (NIDDM)," "Type I diabetes (mellitus) (DM)," or "Type II diabetes (mellitus)(DM);" it also includes mention of the term "diabetic." This excludes mention of a history of "glucose intolerance," "hyperglycemia," "hypoglycemia," or "diabetes insipidus" or steroid induced diabetes.

Answer "Yes" if the history includes any mention of the patient taking, either prior to or at discharge, the medication insulin (Medicines within this category fall within one of several classes, including Biguanides, Meglitinides, Sulfonylureas, Thiazolidinediones, Alpha glucosidase inhibitors, Dipeptidyl peptidase inhibitors, Ergot alkaloids; See Appendix BB), even if no explicit mention is made of diabetes. Do not look at medications given in the hospital, nor at glucose levels during this hospitalization. Answer "No" if the history explicitly states that the patient has no history of diabetes and there is no mention of diabetes diagnosed during this hospitalization.
Answer “No” to prediabetes.
Answer "Unknown" if there is no mention of the above terms and no mention of the above

medications.

39. History of stroke prior to this event? Use the same guidelines for searching the chart as described in the previous MI question (question 32). This refers to events preceding the present acute illness and hospitalization. Synonyms for "stroke" may include some of the following: cortical infarction, intracranial hemorrhage, cerebral thrombosis, cerebral artery occlusion, cerebral infarction, subarachnoid hemorrhage, apoplexy, cerebrovascular accident (CVA), intracerebral hemorrhage. Answer "Yes" if one or more of the sources makes explicit mention of previous "stroke" or states: a history of "probable stroke", a history "consistent with stroke", a diagnosis of "CVA vs. TIA", reversible ischemic neurological deficit, or partially reversible ischemic neurological deficit lasting > 24 hours. Answer "No" if absence of stroke is explicitly mentioned, if symptoms lasted less than 24 hours, if stroke was "possible" or "questionable" only, or if patient had "TIA" only with no documented residual findings. "No previous cerebrovascular disease" = No. (This means patient was normal within 24 hours after onset of symptoms and therefore did not have a stroke.) Answer "U", otherwise, or if the only information about old stroke is from a CT scan without a confirmatory note by the physician. If the physician confirms that CT showed old cerebral infarct then record “yes”. This information is needed to distinguish first events from recurrent events in subsequent data analyses. Homonymous hemianopia (HH) or left field cut is recorded as "Unknown". "Denies chronic diseases" is recorded as "Unknown". If there is good documentation of a patient's history, the abstractor can answer "No", even if no stroke is not explicitly stated.

40. Stroke within four weeks prior to the event. Review history for recency of stroke.

41. Biomarker availability. The cardiac biomarkers of interest are total creatinine kinase (CK or CPK) and its MB (myocardial band markers of heart) fraction, total lactate dehydrogenase (LDH or LD) and its LDH1 and LDH2 fractions, and Troponin I and Troponin T. Refer to laboratory reports. Do not use biomarker values recorded in progress notes unless some or all lab value reports are obviously missing. Were any cardiac biomarkers reported within days 1 to 4 after arrival at this hospital or after the in-hospital CHD event? You must first determine when the event occurred, then determine the appropriate biomarkers to review.

42. a. Trauma. Locate laboratory values for biomarker values and note the date the biomarkers were done. Look in the history, etc., for any mention of trauma (including any major surgery, CPR, CABG, defibrillation - including that for atrial fibrillation, crushing injury, extensive bruising, or electrical injury) or rhabdomyolysis (disintegration of muscle) within one week prior to the measurement of biomarkers. These major trauma factors are non-ischemic causes for elevated biomarkers. A Swan-Ganz insertion or Swan-Ganz pacer is a "No" answer. Minor trauma such as scrapes, cuts, nicks, and psychological trauma call for an answer of "No". Dialysis, abdominal aortogram, dental surgery also should be answered as "No". Consider "nothing recorded" as "No". A lumbar puncture procedure should be considered as "No" trauma. Seizures = "Yes". Precordial thump = "Yes". Thoracentesis = "Yes".

Procedures. Did the patient have any cardiac surgical procedures during the week prior to the measurement of biomarkers? These procedures include invasive (cutting) procedures only, such as cardiac cath, angioplasty, etc. Consider "nothing recorded" as "No". Cardioversion is considered "Yes". EPS is considered "Yes".

When in doubt, ask your Surveillance Director. Note: It is preferable, when in doubt, to answer "Yes" and specify, so that the true answer can be determined later.

42. b. If the participant has had trauma, surgical procedures, or rhabdomyolysis, select all that occured prior to blood sampling from the list provided. If another type of cardiac trauma or non-cardiac procedure occurred, specify in the space provided in 42.b.4 and 42.b.8

respectively. Included in cardiac procedure (42.b.1) are CABG, coronary angioplasty, coronary angiogram, stent placement and any procedure that has the potential to cut heart muscle.

42. c. Indicate the item number from the biomarker section (CK/CPK, CK-MB, LDH, and troponin) corresponding to the first biomarker measurements performed after the cardiac procedure, CPR or cardioversion, other cardiac trauma or other trauma indicated in 42 a.

The biomarkers used in the ARIC diagnostic algorithm include CK/CPK, CK-MB, LDH, and troponin. BNP and serum creatinine are NOT used as biomarkers in the ARIC algorithm and should not be considered for this answer.

d. Hemolytic disease. Was there any evidence of hemolytic disease in the Discharge Summary (examples include: hemolytic anemia, disseminated intravascular coagulation, myelophthisic anemia, nonspherocytic anemia, sickle cell, etc.)? Treat "nothing recorded" as "No". Also, pernicious anemia, macrocytic anemia, normocytic anemia, hypochronic microcytic anemia, anemia due to chronic renal failure and microcytic anemia without hemolysis are all recorded as "No".

43. Biomarkers of interest.

Total CK	Synonyms: CK, CPK, Total CPK, creatine kinase, creatine phosphokinase, CKI It has heart (MB), skeletal muscle (MM), and brain (BB) fractions. If MB, MM, and BB are given separately, add them to obtain total CK.
CK-MB	Synonyms: CPK-MB, CK-heart fraction
Total LDH	Synonyms: Lactate dehydrogenase, LD
LDH1 and **LDH2**	Fractions of LDH. Synonym for LDH1 = heat stable LDH. (There are 3 other fractions of LDH 3-5, not of interest.)
LDH1/LDH2	Their ratio. May not be given in some hospitals.
Troponin I	Cardiac troponin is a contractile protein not normally found in blood. Its detection in the circulation is a marker for myocardial cell damage. Cardiac troponin may be measured in some hospitals and used for diagnosing myocardial injury. One or both isoforms (I or T) may be measured. Troponin I may be more specific than CPK-MB and not affected by noncardiac trauma. Space to record cardiac troponin was added to the HRA Form in May 1997.
Troponin T	Most hospitals assay only Troponin I, but T may also be reported.
BNP	B-Type Natriuretic Peptide is hormone measured in serum, most commonly as pg/ml. This peptide is produced by the heart and is elevated in patients with heart failure. BNP may not be done in some hospitals.
Serum Creatinine	Serum Creatinine is an indication of kidney function and is measured most commonly in mg/dl units.
pro-BNP	N-terminal prohormone brain natriuretic peptide(pro-BNP) is a cardiac neurohormone specifically secreted from the cardiac ventricles as a response to ventricular volume expansion, pressure overload, and resultant increased wall tension.

Biomarker Units

Biomarker units are variable from hospital to hospital. Some hospitals may use different normal ranges within their own laboratory or may even use normal ranges from another hospital. Possible units are:

Total CK Units/ml or I.U.

CK-MB Units/ml or I.U. Special units include: negative/positive, absent/present, normal/abnormal, negative/weak positive/positive, absent/weak present or trace/present, normal/high normal/abnormal, absent/small/moderate/large.

May also be reported as a percent or decimal proportion of total CK.

LDH Units/l or I.U.

LDH1, LDH2 Units/l or I.U. May also be reported as a percent or decimal proportion of total LDH.

LDH1/LDH2 Usually expressed as a percentage or decimal proportion. May be reported only as < or ≥ 1.0 or 0.8. May be reported as negative/positive or LDH1 vs LDH2, or not flipped/flipped.

Troponin Units/ml or ng/ml. Special units may also be used and would include negative/positive.

BNP **Units pg/ml with one decimal**

Serum Creatinine Units mg/dl with one decimal

Refer to hospital charts or with the hospital lab for information concerning unusual formats.

Recording Procedure

The first step is to find the range sets in use for hospital days 1-4 and record the upper limit of biomarkers pertinent to this patient in Q43. Range Set 1 is the primary in-lab set, Set 2 is the alternate (e.g. Point of Care) if one. If there are two primary or secondary sets, take the first drawn values. Only numbers should go in the upper limit field. If not numbers, leave the upper limit field blank and code special units. Code special units as indicated on the form. (If there are two different units used for a single biomarker determination, select the more informative unit.)

Examples

(Normal Range)	Upper Limit	Special Unit
CK-MB (0-10 IU)	0010.00	
CK-MB (Present/Absent)	..	1

LDH1 (0-50% of total LDH)	0050.00	3
LDH1/LDH2 (0.0-1.0)	001.00	6
LDH1/LDH2 (< 100%)	100.00	5
LDH1/LDH2 (negative/positive)		7
Troponin (0.0-1.0)	000.80	
Troponin (negative/positive)		1

When in doubt, consult the hospital lab.

Occasionally, there may be more than one method used by a hospital to measure a particular biomarker, *e.g.*, a total LDH may be done as part of the admission battery, and also as part of the cardiac biomarker routine, with differing normal ranges with each test. List them as indicated and use the second range set. If biomarkers are available in both units and percentages, units are preferred. Biomarkers recorded for one item number should have been measured at the same time.

If the enzyme report has more than one interpretation, for example a narrative interpretation in addition to the "lab limits", the "lab limit" report is preferred.

If there are multiple reports to choose from, use the following hierarchy for recording hospital labs and their standards: (1) that report the MOST set of lab results for that particular lab; (2) that report the FIRST set of lab results for that particular lab; (3) that are a mix and match and choose the lowest/highest range regardless of the results; and (4) that report the WORST results for that particular lab.

If the biomarkers are drawn three times in a day and there is only room to record two sets, select the sets that have the highest total CPK,CK-MB, and /or Troponin values and highest LDH. Do not mix and match biomarkers drawn at different times unless they are fairly close together (within 1 to 2 hours) and no cardiac procedure took place during that interval.

If a biomarker is not measured, leave the corresponding fields blank.

In cases where an enzyme (LDH, CPK) is reported both as a SMAC profile and as part of a specific isoenzyme battery, record the latter value for the total enzyme.

Note: Whenever CK fractions (MB, MM, BB) are recorded in international units but not total CK, <u>total CK</u> should be calculated and recorded as the sum of MB + MM + BB. The upper range for total CK in this case is the sum of the upper ranges for MB + MM + BB.

Troponin has an upper normal range of approximately 0.8 ng/ml. There may be a semiquantitative assay available that would be negative/positive.

Note: Troponin levels could be affected by cardiac trauma, such as CATH/CABG.

44. - 56. Patient values. Determine which biomarkers are available for Days 1-4. Day 1 is the first calendar day of admission to this hospital or the date of occurrence of in-hospital event. Day 2 is the next calendar day regardless of the time of the event. Days 3 and 4 are the succeeding calendar days. Use date of blood collection, if recorded on the lab report. If not recorded, use the date of arrival at or processing at the lab to determine Days 1-4. If exact onset of event is unknown, use best estimate. (It is better to include biomarkers on form than exclude if dates are questionable.) Record biomarkers starting at 00:01 on the day of the in-hospital event.

Record values for each biomarker in chronological order. (The sequential acquisition number often stamped on the lab reports may be helpful in clarifying order.) If no time is listed, assume a time of 12:00 noon.

Note: If no biomarkers were done on any of days 1-4, indicate this in HRA 41 and all biomarkers will be skipped by the system except for HRA43cc, HRA43dd and HRA43ee. If those three values are not available in the chart, leave the fields blank and set the field status to 'Missing' on each of the 3 fields."

If there are a number of biomarkers in Day 1 (more than one) and all are above normal, select the one with the highest troponin value. If more than 2 sets on days 2,3,4, select the 2 sets with the highest troponin value.
For example:

Date	Time	Troponins Enzymes	Day two Only pick two
6/6	0622	0.10	1. 0900 1.12
6/6	0900	1.12	2. 1700 2.27
6/6	1300	0.95	
6/6	1700	2.27	

Record values accurately, paying careful attention to units and decimal points for proportions and percents. LDH1 and LDH2 must be reported on the same specimen; otherwise the biomarkers recorded in A, C (and E) need not be from the same specimen. If there is no value for a given biomarker, leave blank. Record LDH1/LDH2 only if it is already computed and recorded in chart. Do not compute from LDH1 and LDH2 values. As indicated in the note in the instructions for the previous question, do calculate total CPK when all three fractions are given (MB, MM, BB).

When standard units, I.U., or percents are the biomarker units, and the value is given with decimal places, record it as it is. However, if the units are expressed as a decimal proportions (e.g., LDH1/LDH2 = 0.43), retain the decimal. A useful rule is that if the value is greater than one, you may round the decimal places to a whole unit. If less than one, keep the decimal places.

If a value is reported as a range (e.g., CPK = 20-30, or CPK < 30) record the higher value (i.e., 30). However, in the case of patient values of troponin (either I and T), if a value reported is a range (e.g. <0.10) record the range (i.e. <0.10). If values for the laboratory standards for troponin (HRA 43u, 43w, 43y, and 43aa) indicate a range (e.g. <0.10) record the higher value (i.e. 0.10). It is not necessary to record the "<" for the laboratory standards. If a "special value" is used for CK-MB or LDH1/LDH2, fill in the corresponding letter (A through E) in the box immediately to the left of the decimal.

If a patient is discharged before day four, leave blank and set the field status to "N/A" in the boxes for date of biomarker draw (Item 54a) and leave item 54b, 55a-p and 56a-p blank. Complete item 48a and 51a similarly if patient is discharged prior to day 2 and 3, respectively.

56.ab Record the initial BNP measurement if one is present in the chart in 56.ab.1. Then record the last measurement available (if more than one) in 56.ab.3. If more than two measurements were taken, record the highest measurement of the remaining measurements in 56.ab.5.

56.ag Record the initial pro-BNP measurement if one is present in the chart in 56.ag.1. Then record the last measurement available (if more than one) in 56.ag.3. If more than two measurements were taken, record the highest measurement of the remaining measurements in 56.ag.5.

56.ad In-lab creatinine values are preferred. Take Point of Care blood creatinine only if in-lab creatinine is not available. Record the value of the first, last and highest measurements of serum creatinine. If there is only one serum creatinine value, then "last" and "highest" values and dates are left blank. Likewise, if there are only two values, 'highest' is left blank. .

First serum creatinine: Record the initial serum creatinine measurement if one is present in the chart in 56ad1. Record the date of the first serum creatinine in 56ad2.

Last serum creatinine (if more than one): Record the last recorded measurement available in the medical record in 56ad5. Record the date of the last serum creatinine in 56ad6.

Highest of remaining values (if more than two) serum creatinine: In addition to recording the first and the last measured serum creatinine in the two preceding questions, the first highest of any remaining measurements is to be recorded in 56ad7. Record the date of this measurement in 56ad8. If there are no serum creatinine measurements other than those recorded in Questions 56ad1 (first) and 56ad5 (last) then leave blank in 56ad7 and 56ad8. If there is more than one date that has the same 'highest' result, use the first date associated with the duplicate reporting of the remaining highest reporting.

56.ae This question should be marked YES if the patient was on kidney dialysis at anytime during this hospitalization or any time in four weeks prior to his or her hospitalization.

57. If any 12-lead ECGs were taken during the admission and are available, record "Yes". (Do not count single-lead or 3-lead rhythm strips.) If no 12-lead ECGs were taken or none can be found, answer "No" and skip to end.

58. If at least one 12-lead ECG in the chart is codable, answer "Yes". If no ECGs are codable, answer "No" and skip to end. 6-lead ECGs can be considered codable.

Reasons for uncodable are:

- More than 6 missing leads
- Muscle tremor artifact throughout record that produces possible false initial R's.
- Other technical errors such as extreme lack of centering marked clipping which effect the Q-waves, or no calibration mark or calibration off by greater than ± .5 mm.

When picking ECGs, do not take a 1/2 standard ECG if full standard ECG taken at same time is available.

Note: Some hospitals with computer ECG databases are no longer printing the ECG standard marks. If this is encountered, consider the ECG codable unless for another reason it is not.

59. The "First ECG" (ECGF) is defined as the first codable ECG recorded after arrival regardless of when the event occurred. Find and code that ECG for Q59-69. Do not chose an ECG if it is uncodable.

Record the date of the first ECG (ECGF) in Q59. If time is missing, ECG is uncodable.

59a. Record time of the first codable ECG. See instruction in Q59 for the selection of the "first codable ECG". This question is optional for records that do not need a re-abstraction.

70. If there are other codable ECGs in the chart answer "Yes". If not, answer "No" and skip.

71. Enter the date of the last codable ECG taken during the admission in Q71 and ignore Q72 - 81.

For a one day admit, if there are two ECGs done, use both ECGs, one for ECGF and the other for ECGL.

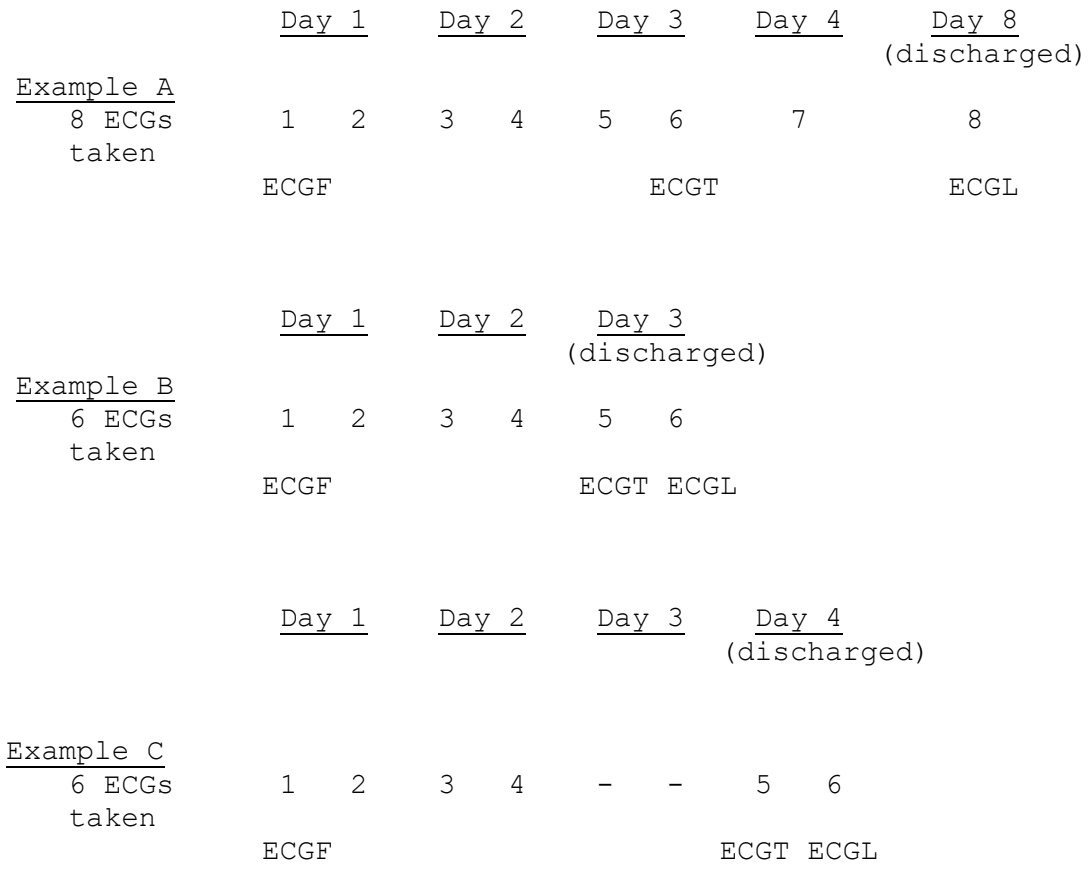
71a. Record time of the last codable ECG. See instruction in Q71 for the selection of the "last codable ECG". This question is optional for records that do not need a re-abstraction.

82. If the event began outside of hospital, day 3 is the third day after arrival, regardless of time of day of admission. For example, for a patient admitted at 12:01 a.m. on 8/25 day 3 is 8/27. Similarly, if admitted 11:59 p.m. on 8/25, day 3 is 8/27. If the event began in the hospital, day 3 is the third day after the event.

If there are codable ECGs (other than ECGL) taken on or after day 3, pick the last codable one on day three or the first available ECG thereafter that is codable be sure to enter the date into Q83 and skip to Item 94.

83. Date of ECGT: Record the date of the third ECG after the event (Find the last codable ECG on day 3 after admission, or on day 3 after an in-hospital event (ECGT). [If day 3 ECG is not available, use first available ECG thereafter.]

83. Examples on finding ECGT:



	Day 1			Day 8 (discharged)
Example D				
2 ECGs taken	1			2
	ECGF	(No ECGT)		ECGL

	Day 1		Day 3		Day 5	
Example E						
6 ECGs taken	1	2	3	4	5	6
				Un-coda-		
	ECGF		ECGT	ble		ECGL

The following examples for choosing ECGF, ECGL, and ECGT include ones for a) no ECG until late in the hospital course, b) hospitalizations less than three days, or c) ECGs taken on less than three days but at least three ECGs are available. General rule: Code up to three ECGs if available and codable, even if definitions do not always fit.

	Day 1	Day 7	Day 9	Day 10 (discharged)
Example A				
3 ECGs taken	None	1	2	3
		ECGF	ECGT	ECGL

	Day 1			Day 2 (discharged)
Example B				
4 ECGs taken	1	2	3	4
	ECGF		ECGT	ECGL

83a. Record the time of day 3 ECG. See instruction in Q83 for the selection of the "day 3 ECG". This question is optional for records that do not need a re-abstraction.

94. Circle the letter(s) corresponding to the 12-lead ECG(s) that will be duplicated and sent to the ECG Reading Center for coding. For example, all three letters will be circled (F.L.T) if at least three ECGs in the chart were codable. Surveillance ECGs that need review should be handled locally by the field center.

Instructions for sending ECGs to ECG Reading Center for Coding

As of July 2014 ECGS will be sent electronically to the ECG Reading Center (See Manual 3, Appendix IV).

97. Abstractor Number. This should be filled in, even when the chart proves to be ineligible. Double check that your code number has been written in on all the ineligibles since this is a common error. Include the date.

98. Date abstract completed. Enter the date the abstraction was completed.

APPENDIX AA

29a. Cardiac Catheterization - invasive procedure usually performed by a cardiologist to visualize heart chambers and contraction. This procedure is usually accompanied by coronary angiography and is generally not performed at the bedside. Include right-sided, left-sided, and both-sided catheterization, but not Swan-Ganz catheterization. (The ICD vodes for cardiac cath include 37.2 or 02x, 027x, 02Cx, 3E0x, 021x, 02Qx. Where "x" denotes truncated codes to the first three characters, as these represent the category of codes that are further subdivided by the use of any or all of the 4th, 5th, 6th or 7th characters)

29b. Coronary Angiography - invasive radiologic procedure to visualize coronary arteries. It is always done with cardiac catheterization, so "cardiac catheterization" should also be checked "Yes" when coronary angiography was present. Occasionally, drugs such as streptokinase are given. References to coronary angiography may be found in radiology reports, chart notes, cardiologist, or consult notes, etc. (The codes include 88.5 or

B2000ZZ	B2001ZZ	B200YZZ	B2010ZZ	B2011ZZ	
B201YZZ	B2040ZZ	B2041ZZ	B204YZZ	B2050ZZ	B2051ZZ
B205YZZ	B2060ZZ	B2061ZZ	B206YZZ	B210010	B2100ZZ
B210110	B2101ZZ	B210Y10	B210YZZ	B211010	B2110ZZ
B211110	B2111ZZ	B211Y10	B211YZZ	B212010	B2120ZZ
B212110	B2121ZZ	B212Y10	B212YZZ	B213010	B2130ZZ
B213110	B2131ZZ	B213Y10	B213YZZ	B2140ZZ	B2141ZZ
B214YZZ	B2150ZZ	B2151ZZ	B215YZZ	B2160ZZ	B2161ZZ
B216YZZ	B2170ZZ	B2171ZZ	B217YZZ	B2180ZZ	B2181ZZ
B218YZZ	B21F0ZZ	B21F1ZZ	B21FYZZ	B5080ZZ	B5081ZZ
B508YZZ	B5090ZZ	B5091ZZ	B509YZZ	B5180ZZ	
B5181ZZ	B518YZZ	B5190ZZ	B5191ZZ	B519YZZ	

This category also includes Digital Subtraction Angiography - also for visualizing coronary arteries. This procedure is noninvasive (not done by catheterization) and involves radioisotopes (88.57 or B2000ZZ, B2001ZZ, B200YZZ, B2010ZZ, B2011ZZ, B201YZZ)

29c. Coronary Angioplasty - dilation of coronaries via a balloon catheter or laser, sometimes done during an acute MI to reperfuse heart. (36.0 or 02x, 027x, 02Cx, 3E0x, 021x, 02Qx. Where "x" denotes truncated codes to the first three characters, as these represent the category of codes that are further subdivided by the use of any or all of the 4th, 5th, 6th or 7th characters)
Cardiac catheterization is also usually done, so "cardiac catheterization" should also be checked "Yes" when coronary angioplasty was present. It excludes coronary atherectomy.

29c2. Coronary Atherectomy - Involves mechanical (cutting) or thermal removal of an atherosclerotic plaque. It excludes balloon or laser angioplasty (item 29c). Cardiac catheterization and coronary angioplasty are almost always done. Synonym = coronary endarterectomy.

29d. Swan-Ganz Catheterization - insertion of balloon tipped (Swan-Ganz) catheter at the bedside into the right side of the heart which can be used to monitor pulmonary arterial pressure continuously and pulmonary capillary wedge pressure and oxygen of mixed venous blood intermittently. Includes pacing Swan-Ganz. (Codes include 89.64 or 02HP30Z, 02HP32Z, 02HP40Z, 02HP42Z, 02HQ30Z, 02HQ32Z, 02HQ40Z, 02HQ42Z, 02HR30Z 02HR32Z, 02HR40Z, 02HR42Z)

29e. Echocardiography - a noninvasive procedure, often abbreviated as "echo", used to visualize heart valves and chambers. Synonyms are: Ultrasound of the Heart; M-Mode and Pulsed Doppler Echocardiography. (Codes include 88.72 or B244YZZ, B244ZZ4, B244ZZZ, B245YZZ, B245ZZ4, B245ZZZ, B246YZZ, B246ZZ4, B246ZZZ, B24DYZZ)

29f. Coronary Bypass Surgery - open-heart surgery in which a prosthesis or a section of blood vessel is grafted onto one of the coronary arteries and connected to the ascending aorta to bypass a narrowing or blockage in a coronary artery. The purpose of CABG is to improve blood supply to the heart, to reduce its workload and to relieve the pain of angina. (36.1 or 02x, 027x, 02Cx, 3E0x, 021x, 02Qx. Where "x" denotes truncated codes to the first three characters, as these represent the category of codes that are further subdivided by the use of any or all of the 4th, 5th, 6th or 7th characters)

29g. Streptokinase, urokinase, eminase, hirudin, hirulog, anistreplase or tissue plasminogen activator (TPA) are coronary reperfusion agents (See Appendix BB). These are drugs given during the early stages of an MI to dissolve coronary thrombus or clots. The drugs may be administered intracoronary or in a peripheral intravenous solution. If given intracoronary, coronary angiography is almost always done, so item (b) should be marked. If given intravenously, answer (h) with "Yes", but do not mark (b). (99.29 or 3E03317, 3E04317, 3E05317, 3E06317, 3E08317)

29i. Aortic Balloon Pump - a mechanical procedure used in severe heart failure or shock or post surgery. Aortic balloon pumps are also called counter pulsation pumps, balloon counter pulsation pumps, intraaortic pumps, AVCO System 7, 10, Datascope System 80, IABP and Datscope, and Percor IABP. (37.6 or 02Cx, 02Nx, 0W9x, 0WCx, 02x, 4A0x, 02Bx, 3E0x, 02Kx, B24x, 02JA3ZZ, 0WJx, 4A02x, 4A12x, B2x, 3E05x, 3E06X, 3E07X, 3E08X, 0WJDx, 02x, 02Tx, 025x, 02Lx, 02Qx, 02Ux, 02Yx, 02Hx, 02Wx, 02Rx, 02Px, 021x, 5A0x, 5A1x, 0JWx, 0JHx, 0JPx. Where "x" denotes truncated codes to the first three characters, as these represent the category of codes that are further subdivided by the use of any or all of the 4th, 5th, 6th or 7th characters)

29j. Radionuclide Scan of Heart - a radioisotope procedure to a) visualize heart contractility and estimate ejection fraction, b) estimate infarct size, or c) gauge myocardial perfusion. Radioisotopes include thallium (Tl201), technetium pyrophosphate (Tc99m). Procedures include "heart scan", MUGA (multigated equilibrium blood pool imaging), radionuclide angiography, ejection fraction radionuclide scan, thallium scan, SPECT imaging, infarct (MI) scan, positron imaging, etc. Digital subtraction angiography is "No" and is instead recorded under coronary angiography, above. These tests would be recorded in radiology or nuclear medicine reports or as procedure codes. Include cardiolite thallium and persantine thallium. Include thallium exercise test in both 29k and 29n.
(92.05 or C2161ZZ, C216YZZ, C21G1ZZ, C21GDZZ, C21GSZZ, C21GYZZ, C21GZZZ, C21YYZZ, C21YYZZ, C2261ZZ, C226YZZ C22G1ZZ, C21YYZZ, C2261ZZ, C226YZZ, C22G1ZZ, C22GDZZ, C22GKZZ, C22GSZZ, C22GYZZ, C22GZZZ, C22YYZZ, C23GKZZ C23GMZZ, C23GQZZ, C23GRZZ, C23GYZZ, C23YYZZ, C51B1ZZ, C51BYZZ, C51C1ZZ, C51CYZZ, C51D1ZZ, C51DYZZ, C51N1ZZ, C51NYZZ, C51P1ZZ, C51PYZZ, C51Q1ZZ, C51QYZZ, C51R1ZZ, C51RYZZ, C51YYZZ, C7101ZZ, C710DZZ, C710YZZ, C7121ZZ, C712YZZ, C713DZZ, C713YZZ C7221ZZ, C722YZZ, C7631ZZ, C7637ZZ, C763CZZ, C763DZZ, C763HZZ, C763WZZ, C763YZZ).

29m. MRI scan of heart - magnetic resonance imaging of the heart.

29n. Exercise stress test - Test of heart function with stationary bike, treadmill or handgrip while monitoring electrocardiogram. Sometimes includes injection of thallium, a radioactive agent that indicates adequacy of blood flow to heart muscle with and without exercise. Also called stress test, treadmill or stress thallium. Include thallium exercise test in both 29k and 29n.

29o. Holter monitoring - Continuous monitoring of heart rhythm for several hours while patient performs usual activities. Also called Holter and ambulatory ECG.

29p. Pacemaker - A pacemaker is an artificial device designed to reproduce or regulate the rhythm of the heart. It is implanted in the body of the patient, is battery-driven, is usually triggered or inhibited to

modify output by sensing intracardiac potential in one or more cardiac chambers, and may also have antitachycardia pacing function. Also includes placing of pacing wires or a temporary or permanent pacemaker. Synonyms include single-chamber pacemaker, dual-chamber pacemaker, biventricular pacemaker, cardiac resynchronization therapy, pacemaker wire, DDD pacemaker, VVI pacemaker.

29p.2. Implanted defibrillator. This refers to an implantable cardioverter defibrillator (ICD) or automatic implantable cardioverter defibrillator AICD. This is an artificial device implanted in the body of the patient to detect potentially-fatal fast arrhythmias and to shock patients out of these rhythms (to prevent "sudden cardiac death" or an "arrhythmic death").

29p2c. Coronary CT - CT scan of the heart, coronary calcium assessment by helical CT or EBCT.

29q. Other procedures might include aortic aneurismectomy, cardiac transplant, pericardiocentesis, electrophysiology (EP) studies. etc.

APPENDIX BB

(Alphabetized)—forCHD

Name	Type	Generic/ Trade
Abbokinase	RA	T
Abciximab	AP	G
Abitrate	LL	G
Acarbose	DM	G
Accupril	ACEI/ARB	T
Accuretic	ACEI/ARB	T
Acebutolol	BB	G
Aceon	ACEI/ARB	T
Acetylsalicylic Acid	ASA	G
Activase	RA	T
Actoplus Met	DM	T
Actos	DM	T
Adalat	CC	T
Adlyxin	DM	T
Advicor	LL	T
Afeditab	CC	T
Afrezza	DM	T
Aggrastat	AP	T
Aggrenox	ASA	T
Aggrenox	AP	T
Agratroban	HA	T
Albiglutide	DM	G
Alirocumab	LL	G
Aliskiren	ACEI/ARB	G
Alka-Seltzer	ASA	T
Altace	ACEI/ARB	T
Alogliptin	DM	G
Alteplase	RA	T
Altocor	LL	T
Altoprev	LL	T
Amaryl	DM	T
Amlod	CC	T
Amlodipine	CC	G
Amturnide (contains Renin Inhibitor)	CC	T
Amturnide (contains Ca Channel Blocker)	ACEI/ARB	T
Anacin	ASA	T
Anginabid	N	T
Angiomax*(see note)	HA	T
Anisindione	HA	G

RA = Reperfusion Agent
N = Nitrate
CC = Calcium Channel Blocker
BB = Beta Blocker
Dig = Digitalis
OA = Oral Anticoagulant
AP = Antiplatelet Agent (non-aspirin)
LL = Lipid Lowering
DM = Diabetes Med
ACEI/ARB = ACE inhibitor, Angiotensin II blocker
ASA = Aspirin
HA = Heparin/Anticoagulant

NOTE: 2013 Bivalirudin, Lepirudin, Refludan, Refulan, Angiomax captured in 26a, 29g,h and in 31i

Name	Type	Generic/ Trade
Anisoylated plasminogen-streptokinase	RA	G
Anistreplase	RA	G
Antara	LL	T
Apixaban	OA	G
APSAC (anisoylated plasminogen-streptokinase activator complex)	RA	G
Ardeparin	HA	G
Argatroban	RA	T
Arixtra	HA	T
Arthritis Pain Formula	ASA	T
ASA	ASA	G
ASA Enseals	ASA	T
Ascriptin	ASA	T
Aspergum	ASA	T
Aspirin	ASA	G
Atacand	ACEI/ARB	T
Atel N (contains Beta Blocker)	CC	T
Atel N (contains Ca Channel Blocker)	BB	T
Atenolol	BB	G
ATII inhibitor	ACEI/ARB	G
Atorvastatin	LL	G
Atromid	LL	T
Avalide	ACEI/ARB	T
Avandamet	DM	T
Avandaryl	DM	T
Avandia	DM	T
Avapro	ACEI/ARB	T
Azilsartan	ACEI/ARB	G
Azor (contains a Calcium Channel Blocker)	ACEI/ARB	T
Azor (contains an angiotensin II inhibitor)	CC	T
Baby Aspirin	ASA	T
Baycol	LL	T
Bayer (Aspirin)	ASA	T
Benazepril	ACEI/ARB	G
Benicar	ACEI/ARB	T
Bepridil	CC	G
Betachron	BB	T
Betapace	BB	T
Betaxolol	BB	G
Betrixaban	OA	G

RA = Reperfusion Agent
N = Nitrate
CC = Calcium Channel Blocker
BB = Beta Blocker
Dig = Digitalis
OA = Oral Anticoagulant
AP = Antiplatelet Agent (non-aspirin)
LL = Lipid Lowering
DM = Diabetes Med
ACEI/ARB = ACE inhibitor, Angiotensin II blocker
ASA = Aspirin
HA = Heparin/Anticoagulant

NOTE: 2013 Bivalirudin, Lepirudin, Refludan, Refulan, Angiomax captured in 26a, 29g,h and in 31i

Name	Type	Generic/ Trade
Bevyxxa	OA	T
Bezafibrate	LL	G
Bezalip	LL	T
BiDil	N	T
Bisopro fum	BB	T
Bisoprol fum	BB	T
Bisoprolol	BB	G
Bivalirudin* (see note)	HA	G
Blocadren	BB	T
Brevibloc	BB	T
Brilinta	AP	T
Bromocriptine	DM	G
Buffaprin	ASA	T
Buffered Aspirin	ASA	T
Bufferin	ASA	T
Buffex	ASA	T
Buffinol	ASA	T
Bydureon	DM	T
Byetta	DM	T
Bystolic	BB	T
Byvalson	BB and ACEI/ARB	T
Cadesartan	ACEI/ARB	G
Caduet (contains a Calcium Channel Blocker)	LL	T
Caduet (contains Lipid Lowering med)	CC	T
Calan	CC	T
CAMA Arthritis Pain Reliever	ASA	T
canagliflozin	DM	G
Cangrelor	AP	G
Capoten	ACEI/ARB	T
Capozide	ACEI/ARB	T
Captopril	ACEI/ARB	G
Cardene	CC	T
Cardilate	N	T
Cardizem	CC	T
Carteolol	BB	G
Cartia XT	CC	T
Cartrol	BB	T
Carvedilol	BB	G
Cedilanid	Dig	T
Cerivastatin	LL	G

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Name	Type	Generic/ Trade
Chlorpropamide	DM	G
Cholestabyl	LL	T
Cholestyramine	LL	G
Cholox	LL	T
Choloxin	LL	T
Cholybar	LL	T
Cilostazol	AP	G
Clevidipine	CC	G
Cleviprex	CC	T
Clofibrate	LL	G
Clopidogrel	AP	G
Colesevelam	LL	G
Colestid	LL	T
Colestipid	LL	G
Colestipol	LL	T
Colestrol	LL	G
Coreg	BB	T
Corgard	BB	T
Corlanor	BB	T
Corzide	BB	T
Coumadin	OA	T
Covera-HS	CC	T
Cozaar	ACEI/ARB	T
Crestor	LL	T
Crystodigin	Dig	T
Cuemid	LL	T
Cycloset	DM	T
Dabigatran	OA	G
Dalteparin	HA	G
Danaparoid sodium	HA	G
dapagliflozin	DM	G
Deponit NTG Film	N	T
Dextrothyroxine sodium	LL	G
DiaBeta	DM	T
Diabinese	DM	T
Dicumarol	OA	T
Digitalis glycoside	Dig	T
Digitek	Dig	T
Digitoxin	Dig	G
Digoxin	Dig	G
Dilacor XR	CC	T
Dilatrate	N	T

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Name	Type	Generic/ Trade
Diltia	CC	T
Diltiazem	CC	G
Diovan	ACEI/ARB	T
Dipyridamole	AP	G
Duetact	DM	T
Dulaglutide	DM	G
Duotrate	N	T
Durlaza	ASA	T
Dutoprol	BB	T
DynaCirc	CC	T
Easprin	ASA	T
Ecotrin	ASA	T
Edarbi	ACEI/ARB	T
Edarbyclor	ACEI/ARB	T
Edoxaban	OA	G
Effient	AP	T
Eliquis	OA	T
Eminase	RA	T
Empagliflozin	DM	G
Empirin	ASA	T
Enalapril	ACEI/ARB	G
Enalaprilat	ACEI/ARB	G
Endur-acin	LL	G
Entresto	ACEI/ARB	T
Enoxaparin	HA	G
Epaned	ACEI/ARB	T
Epanova	LL	T
Epoprostenol	AP	G
Eprosartan	ACEI/ARB	G
Eptifibatide	AP	G
Esmolol	BB	G
Evolocumab	LL	G
Excedrin	ASA	T
Exenatide	DM	G
Exforge (contains Angiotensin II Inhibitor)	CC	T
Exforge (contains Calcium Channel Blocker)	ACEI/ARB	T
Ezetimibe	LL	G
Farxiga	DM	T
Felodipine	CC	G
Fenofibrate	LL	G
Fenofibric acid	LL	G

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Name	Type	Generic/ Trade
Fenoglide	LL	T
Fibricor	LL	T
Flolan	AP	T
Fluvastatin	LL	G
Fondaparinux	HA	G
Fortamet	DM	T
Fosinapril	ACEI/ARB	G
Fragmin	HA	T
Gelpirin	ASA	T
Gemfibrozil	LL	G
Genprin	ASA	T
Gliclazide	DM	G
Glimepiride	DM	G
Glipizide	DM	G
Glipizide and Metformin	DM	G
Glucophage	DM	T
Glucophage XR	DM	G
Glucotrol	DM	T
Glucovance	DM	T
Glumetza	DM	T
Glyburide	DM	G
Glyburide and Metformin	DM	T
Glynase	DM	T
Glyset	DM	T
Glyxambi	DM	T
Halfprin	ASA	T
Heparin	HA	G
Heparin	HA	T
Heparin Sulfate	HA	G
Heparin Sulfate	HA	G
Hirudin	HA	T
Hirulog	HA	G
Humalog	DM	T
Humalog Mix50/50, Humalog Mix75/25	DM	T
Humulin 70/30, Novolin 70/30	DM	T
Humulin N	DM	T
Humulin R	DM	G
Hyzaar	ACEI/ARB	T
I.S.D.	N	T
icosapent	LL	G
Imdur	N	T

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Name	Type	Generic/ Trade
Inderal	BB	T
Inderide	BB	T
Innohep	HA	T
Innopran XL	BB	T
Insulin	DM	G
Insulin aspart	DM	T
Insulin aspart protamine/insulin aspart	DM	G
Insulin glargine	DM	G
Insulin lispro	DM	G
Insulin lispro protamine/insulin lispro	DM	G
Integrilin	AP	T
Invokamet	DM	T
Invokana	DM	T
Irbesartan	ACEI/ARB	G
Ismo	N	T
Iso-Bid	N	T
Isochron	N	T
Isoptin	CC	T
Isordil	N	T
Isosorb mono	N	T
Isosorbdin	N	T
Isosorbide	N	T
Isosorbide dinitrate	N	G
Isosorbide mononitrate	N	G
Isotrate	N	T
Isradipine	CC	G
Ivabradine	BB	G
Janumet	DM	T
Januvia	DM	T
Jardiance	DM	T
Jentadueto	T	DM
Juvisync (contains Diabetic Medication)	LL	T
Juvisync (contains Lipid Lowering Med)	DM	T
Juxtapid	LL	T
Kabikinase	RA	T
Kazano	DM	T
Kengreal	AP	T
Kerlone	BB	T
Kinlytic	RA	T
Kombiglyze	DM	T

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Name	Type	Generic/ Trade
Kynamro	LL	T
Labetalol	BB	G
Lanoxicaps	Dig	T
Lanoxin	Dig	T
Lantus	DM	T
Lepirudin* (see note)	HA	G
Lescol	LL	T
Lestid	LL	T
Levatol	BB	T
Levemir	DM	T
Lexxel (contains ACE inhibitor)	CC	T
Lexxel (contains Calcium Blocker)	ACEI/ARB	T
Linagliptin	DM	G
Lipitor	LL	T
Lipofin	LL	T
Liptruzet	LL	T
Liraglutide	DM	G
Lisinopril	ACEI/ARB	G
Lismol	LL	T
Livalo	LL	T
Lixisenatide	DM	G
Locholest	LL	T
Lofibra	LL	T
lomitapide	LL	G
Lopid	LL	T
Lopressor	BB	T
Lorelco	LL	T
Losartan	ACEI/ARB	G
Lotensin	ACEI/ARB	T
Lotrel (contains ACE inhibitor)	CC	T
Lotrel (contains Calcium Channel Blocker)	ACEI/ARB	T
Lovastatin	LL	G
Lovaza	LL	T
Lovenox	HA	T
Magnaprin	ASA	T
Mavik	ACEI/ARB	T
Measurin	ASA	T
Metaglip	DM	T
Metformin	DM	G
Metoprolol	BB	G

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Name	Type	Generic/ Trade
Mevacor	LL	T
Mibefradil	CC	G
Micardis	ACEI/ARB	T
Micronase	DM	G
Miglitol	DM	T
Minitran	N	T
mipomersen	LL	G
Miradon	HA	T
Mi-trates	N	T
Moexipril	ACEI/ARB	G
Monoket	N	T
Monopril	ACEI/ARB	T
N.T.S.	N	T
Nadolol	BB	G
Nateglinide	DM	G
Nebivolol	BB	G
Nesina	DM	T
Nia-bid	LL	T
Niac	LL	T
Niacels	LL	T
Niacin	LL	T
Niacinamide	LL	G
Niacinol	LL	T
Niacor	LL	T
Niaspan	LL	T
Niatab	LL	T
Nicardipine	CC	G
Nico-400	LL	T
Nicobid	LL	T
Nicolar	LL	T
Nicotinamide	LL	G
Nicotinex	LL	T
Nicotinic acid	LL	G
Nifedical XL	CC	T
Nifedipine	CC	G
Nimodipine	CC	G
Nimotop	CC	T
Nisoldipine	CC	G
Nitrates	N	G
Nitrek	N	T
Nitrites	N	G
Nitro	N	T

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Name	Type	Generic/ Trade
NitroBid	N	T
Nitrocap	N	T
Nitrocine	N	T
Nitrocot	N	T
Nitrodisc	N	T
NitroDur	N	T
Nitrogard	N	T
Nitroglycerin	N	T
Nitroglyn	N	T
Nitrol	N	T
Nitrolin	N	T
Nitrolingual	N	T
Nitromist	N	T
Nitronal	N	T
Nitrong	N	T
Nitro-par	N	T
Nitroquick	N	T
Nitrorex	N	T
Nitrospan	N	T
Nitrostat	N	T
Nitrotab	N	T
Nitro-time	N	T
Nitro-transderm	N	T
Nitrotransdermal	N	T
Normiflo	HA	T
Normodyne	BB	T
Normozide	BB	T
Norvasc	CC	T
Norwich	ASA	T
Novolin N	DM	T
Novolin R	DM	T
NovoLog	DM	T
NovoLog Mix 50/50, NovoLog® Mix 70/30	DM	T
NPH insulin /regular insulin	DM	G
NTG	N	G
NTG-spray	N	T
Nymalize	CC	T
Olmesartan	ACEI/ARB	G
Omacor	LL	T
Omtryg	LL	T
Onglyza	DM	T
Orgaran	HA	T

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Name	Type	Generic/ Trade
Orinase	DM	T
Oseni	DM	T
Ozempic	DM	T
Panwarfin	OA	T
Penbutolol	BB	G
Pentylan	N	T
Perindopril	ACEI/ARB	G
Peritrate	N	T
Persantine	AP	T
Pindolol	BB	G
Pioglitazone	DM	G
Pioglitazone and Metformin	DM	G
Pioglitazone and Glimepiride	DM	G
Pitavastatin	LL	G
Plavix	AP	T
Plendil	CC	T
Pletal	AP	T
Posicor	CC	T
Pradaxa	OA	T
Pramlintide acetate	DM	G
Prandimet	DM	T
Prandin	DM	T
Prasugrel	AP	G
Pravachol	LL	T
Pravastatin	LL	G
Precose	DM	G
Prestalia	CC plus ACEI/ARB	T
Prevalite	LL	T
Prexxartan	ACEI/ARB	T
Prinivil	ACEI/ARB	T
Prinzide	ACEI/ARB	T
Probucol	LL	G
Procardia	CC	T
Praluent	LL	T
Propranolol	BB	G
Qtern	DM	T
Quantalan	LL	T
Questran	LL	T
Questran light	LL	T
Quinapril	ACEI/ARB	G
Ramipril	ACEI/ARB	G

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Name	Type	Generic/ Trade
Refludan* (see note)	HA	T
Refulan*(see note)	HA	T
Renin inhibitor	ACEI/ARB	G
ReoPro	AP	T
Repaglinide	DM	G
Repaglinide and Metformin	DM	G
Repatha	LL	T
Retavase	RA	T
Reteplase	RA	G
Riomet	DM	T
Rivaroxaban	OA	T
Rosiglitazone	DM	G
Rosiglitazone and Glimepiride	DM	G
Rosiglitazone and Metformin	DM	G
Rosuvastatin	LL	G
Rybelsus	DM	T
Ryzodeg	DM	T
Sacubitril/Valsartan	ACEI/ARB	G
Savayasa	OA	T
Saxaglipten	DM	G
Sectral	BB	T
Semiglutide	DM	G
Simcor	LL	T
Simvastatin	LL	G
Sitaglipten and Metformin	DM	G
Sitagliptin	DM	G
Slo-niacin	LL	T
Soliqua	DM	T
Sorbitrate	N	T
Sotalol	BB	G
Sotylize	BB	T
St. Joseph	ASA	T
Starlix	DM	T
Streptase	RA	T
Streptokinase	RA	G
Sular	CC	T
Symlin	DM	T
Synjardy	DM	T
Tanzeum	DM	T
Tarka (contains ACE Inhibitor)	CC	T
Tarka (contains Calcium	ACEI/ARB	T

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Name	Type	Generic/ Trade
Channel Blocker)		
Taztia XT	CC	T
Teczem (contains ACE Inhibitor)	CC	T
Teczem (contains Calcium Channel Blocker)	ACEI/ARB	T
Tekamlo (contains ACE Inhibitor)	CC	T
Tekamlo (contains Calcium Channel Blocker)	ACEI/ARB	T
Tekturna	ACEI/ARB	T
Telmisartan	ACEI/ARB	G
Tenecteplase	RA	G
Tenoretic	BB	T
Tenormin	BB	T
Teveten	ACEI/ARB	T
Tiamate	CC	T
Tiazac	CC	T
Ticagrelor	AP	G
Ticlid	AP	T
Ticlopidine	AP	G
Timolide	BB	T
Timolol	BB	G
Timolol eye drops = "no"	BB	G
Tinzaparin	HA	G
Tirofiban	AP	G
Tissue plasminogen activator (TPA)	RA	G
TNKase	RA	T
Tolazamide	DM	G
Tolbutamide	DM	G
Tolinase	DM	T
Tol-Tab	DM	T
Toprol XL	BB	T
Trandate	BB	T
Tradjenta	DM	T
Trandolapril	ACEI/ARB	G
Transderm	N	T
Transdermal NTG	N	T
Tresiba	DM	T
Tribenzor (contains Calcium Channel Blocker)	ACEI/ARB	T
Tribenzor (contains Angiotensin II Inhibitor)	CC	T
Tricor	LL	T
Tridil	N	T

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Name	Type	Generic/ Trade
Triglide	LL	T
Trilipix	LL	T
Trinitroglycerine	N	G
Trulicity	DM	T
Twynsta(contains Angiotensin II Inhibitor)	CC	T
Twynsta (contains Calcium Channel Blocker)	ACEI/ARB	T
Uniretic	ACEI/ARB	T
Univasc	ACEI/ARB	T
Urokinase	RA	G
Valsartan	ACEI/ARB	G
Valturna	ACEI/ARB	T
Vascepa	LL	T
Vascor	CC	T
Vaseretic	ACEI/ARB	T
Vasotec	ACEI/ARB	T
Verapamil	CC	G
Verelan	CC	T
Verin	ASA	T
Victoza	DM	T
Visken	BB	T
Vitamin b-3	LL	G
Vorapaxar	AP	G
Vytorin	LL	T
WelChol	LL	T
Wesprin Buffered	ASA	T
Xarelto	OA	T
Xemilofiban	AP	G
Xigduo	DM	T
Xultophy	T	DM
Yosprala	T	ASA
Zebeta	BB	T
Zestoretic	ACEI/ARB	T
Zestril	ACEI/ARB	T
Zetia	LL	T
Ziac	BB	T
Zocor	LL	T
Zontivity	AP	T
ZORprin	ASA	T

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APPENDIX CC

HOSPITAL CODES

List of Active Catchment Area Hospitals as of 9/28/2015

Site	Name	Hospital Type	Notes
Forsyth County			
11	North Carolina Baptist	Teaching	
12	Forsyth County Memorial	Nonteaching	
13	Medical Park	Nonteaching	
14	Kernersville Medical Center	Nonteaching	Added in 2013
15	Clemmons Medical Center	Nonteaching	Added in 2014
96	Hospital outside study area	--	
Jackson			
21	University of Mississippi Med Center	Teaching	
22	Veterans Administration Hospital	Teaching	
23	St. Dominic's Hospital	Nonteaching	
24	Merit Health Central Med Center	Nonteaching	Name change 2015
25	Mississippi Baptist Hospital	Nonteaching	
26	Merit Health Hospital	Nonteaching	Name change 2015
27	Merit Health Madison Hospital	Nonteaching	JHS only (name change in 2015)
28	Merit Health Rankin Hospital	Nonteaching	JHS only (name change in 2015)
97	Hospital out of study area	--	
Minnesota Townships			
30	Abbott-Northwestern Hospital – Allina Health	Teaching	Name change 2015
32	Fairview Southdale Hospital – Fairview Health Services	Nonteaching	Name change 2015
34	Hennepin County Medical Center	Teaching	
35	Mercy Hospital – Allina Health	Nonteaching	Name change 2015
36	Park Nicollet Medical Center	Teaching	Name change 2015
40	North Memorial Medical Center	Teaching	
44	Unity Hospital – Allina Health	Nonteaching	Name change 2015
45	University of Minnesota Medical Center, Fairview	Teaching	
46	VA Medical Center	Teaching	
98	Hospital out of study area	--	
Washington County			
51	Meritus Medical Center	Nonteaching -	Name change in 2013
52	Western Maryland Center	Nonteaching	
53	VA Medical Center, WV	Nonteaching	
54	University of Maryland	Teaching	
55	Frederick Memorial	Nonteaching	
56	Johns Hopkins Hospital	Teaching	
57	Washington Hospital Center	Nonteaching	
58	George Washington University	Teaching	
59	Georgetown University	Teaching	
60	Saint Joseph Medical Center	Nonteaching	
61	Washington Adventist	Nonteaching	
62	Sinai Hospital	Nonteaching	
63	Union Memorial	Nonteaching	
99	Hospital out of study area	--	

Inactive Hospitals (Minnesota)

31	Riverside Medical Center	Teaching	Closed
33	Fairview- Ridges	Non-teaching	Closed
37	Metropolitan	Non teaching	Closed
38	Midway	Non teaching	Closed
39	Mt. Sinai	Non teaching	Closed
41	St. Paul Ramsey	Non teaching	Closed
42	St. John's Northeast	Non teaching	Closed
43	St. Mary's	Non teaching	Closed
47	Fairview	Non teaching	
48	Phillips Eye Institute	Non Teaching	

APPENDIX DD

		Symptoms	Answers Q23b	Q25a	Q25b	Q23a
A.	9/1	First episode of acute, severe chest pain, 8 AM	Y	H	Y	9/2
	9/2-4	Many daily, less severe episodes of chest pain; none more prominent				
	9/5	Admission, 10 AM				
		Explanation: The first pain seems most prominent (use judgement based on chart). Although onset of first pain was 9/1, the first within 72 hours was on 9/2.				
B.	9/1	Collapse, no mention of pain, 8 AM	Y	B	N	-
	9/1	Admission, 9 AM				
		Explanation: No chest pain occurred.				
C.	9/1	First acute, severe chest pain, 8 AM, resolved quickly	Y	A	Y	9/5
	9/2-4	No symptoms				
	9/5	Second acute, severe chest pain, 8 AM, did not resolve				
	9/5	Admission, 8:30 AM				
		Explanation: Second pain is most prominent and is the event.				
D.	9/1-4	Chronic anginal pain, 8 AM every day	Y	B	Y	9/5
	9/5	Different, severe pain, 8 AM				
	9/5	Admission, 9:30 AM				
		Explanation: 9/5 pain is the event.				
E.	9/1	Admitted for hernia repair	N	-	Y	9/3
	9/3	First acute chest pain				
		Explanation: In-hospital event.				

		Symptoms	Answers Q23b	Q25a	Q25b		Q23a
F.	9/1	Indigestion, 8 AM	Y	H	Y	9/2	
		Settles in chest, 10 AM					
	9/2-4	Stays in bed with vague chest pain which gradually gets worse					
	9/5	Admission, 10 PM					
		Explanation: Clearest onset is AM 9/1. If pain was continuous, first pain within 72 hours of admission was 9/2 at 10PM.					
G.	9/1	Marked fatigue and shortness of breath, 8 AM	Y	G	N	-	
	9/2	Admitted after MD does office ECG, 8 AM					
		Explanation: Marked fatigue and shortness of breath can be acute cardiac symptoms. Never had chest pain.					

APPENDIX EE

SOUNDEX

Soundex is a system of converting names and addresses to a short abbreviation. It is used in ARIC abstracting when the hospital, for confidentiality reasons, will not let the patient name or address be abstracted verbatim. In that case it is often acceptable to record the Soundex code for the patient's name and address.

APPENDIX FF

ARIC SURVEILLANCE ECG SHIPPING INVENTORY

Batch: _____ Date:_____

Type of Case:_____

Pos	Surv.ID	#ECG	Pos	Surv.ID	#ECG	Pos	Surv.ID	#ECG	Pos	Surv.ID	#ECG
01	_____	____	26	_____	____	51	_____	____	76	_____	____
02	_____	____	27	_____	____	52	_____	____	77	_____	____
03	_____	____	28	_____	____	53	_____	____	78	_____	____
04	_____	____	29	_____	____	54	_____	____	79	_____	____
05	_____	____	30	_____	____	55	_____	____	80	_____	____
06	_____	____	31	_____	____	56	_____	____	81	_____	____
07	_____	____	32	_____	____	57	_____	____	82	_____	____
08	_____	____	33	_____	____	58	_____	____	83	_____	____
09	_____	____	34	_____	____	59	_____	____	84	_____	____
10	_____	____	35	_____	____	60	_____	____	85	_____	____
11	_____	____	36	_____	____	61	_____	____	86	_____	____
12	_____	____	37	_____	____	62	_____	____	87	_____	____
13	_____	____	38	_____	____	63	_____	____	88	_____	____
14	_____	____	39	_____	____	64	_____	____	89	_____	____
15	_____	____	40	_____	____	65	_____	____	90	_____	____
16	_____	____	41	_____	____	66	_____	____	91	_____	____
17	_____	____	42	_____	____	67	_____	____	92	_____	____
18	_____	____	43	_____	____	68	_____	____	93	_____	____
19	_____	____	44	_____	____	69	_____	____	94	_____	____
20	_____	____	45	_____	____	70	_____	____	95	_____	____
21	_____	____	46	_____	____	71	_____	____	96	_____	____
22	_____	____	47	_____	____	72	_____	____	97	_____	____
23	_____	____	48	_____	____	73	_____	____	98	_____	____
24	_____	____	49	_____	____	74	_____	____	99	_____	____
25	_____	____	50	_____	____	75	_____	____	00	_____	____

APPENDIX GG

HRA

Table of Response by Type of Past History

	Q. 32 MI	Q. 33 angina	Q. 38 HTN	Q. 38b Diabetes	Q. 39 STR
No prior IHD/CHD	N	N	U	U	U
Previously well	N	N	N	N	N
No heart disease	N	N	U	U	U
No adult diseases	N	N	N	N	N
Negative medical history	N	N	N	N	N
No cardiovascular disease	N	N	U	U	U
No cardiac problems/history	N	N	U	U	U
No neurological problems	U	U	U	U	N
No major medical problems	N	N	U	N	N
General health quite good	N	N	U	N	U
Denies medical problems	N	N	N	N	N
In good health	N	N	U	N	N
Negative health history	N	N	N	N	N
In general good health	N	N	U	N	N
Generally in good health (vague)	U	U	U	U	U
Previous heart disease (vague)	U	U	U	U	U
No prior history of cardiac problems	N	N	U	U	U
No previous medical history	N	N	N	N	N
No major illnesses	N	N	U	N	N
Unremarkable	N	N	U	N	N
Essentially unremarkable	U	U	U	U	U
No known cardiac risk factors	N/A	N/A	N	N	N/A
Denies chronic diseases	U	U	U	N	U
No definite cardiac history (vague)	U	U	U	U	U
Healthy	N	N	U	N	N