HCHS/SOL HEART FAILURE ABSTRACTION (HTF) FORM
QUESTION BY QUESTION (Q x Q) INSTRUCTIONS
HEART FAILURE HOSPITALIZATIONS AND EMERGENCY ROOM VISITS

GENERAL INSTRUCTIONS

The HTF form will be used for a subset of hospitalizations visits as indicated by the Event Eligibility Form (EEF).

The purpose of these instructions is to make sure all HCHS/SOL medical record abstractors are collecting information in a standardized way. The more specific information you have about each item on the form--and the more you know about where to find the "answers" and how to record them--the more uniform and useful the data will be. Although you may have ample experience in medical record abstraction and medical terminology, these instructions provide many definitions that will help ensure everyone is using the same "tools".

For each item on the form, the instructions will tell you where in the medical record, and in what order, to look for the required information. When consulting several sections of the medical record, you may find that they provide different or even contradictory information. It is, therefore, very important to consult all sections of the medical record listed for a given item.

If you are unable to complete an item on the form because of missing or contradictory information in the medical record, consult your physician reviewer for advice.

Multiple Care Locations: In general, there are three different options to make sure everything is abstracted when care is received in two locations:

(a) Two entirely separate investigations, each with its own abstraction form. (Use this method for two events separated by 24 hours, though the Events staff has the option of collapsing events into a single investigation if conditions are directly related and admissions are within 30-day span).

(b) One investigation with two or more abstraction forms. (Use for single event involving two admissions linked by a transfer.)

(c) One investigation with one abstraction form, even though care was received in two locations. (Use for one event that involves multiple locations but only one actual admission, such as ER visit at one hospital followed by admission to a different hospital.)

Sections and Content of the Medical Record Used for Abstraction

You need to consult all of the following sections of the medical record, as appropriate, in order to gather adequate information to complete the form. If the entire chart is available, these sections should be reviewed first. It is a good idea to read through these sections (and others, if possible), before you begin recording information on the form, in order to familiarize yourself with the course of events that occurred from admission to discharge. Although the instructions for each individual form item sometimes list the **most likely** sources for finding the information sought by that particular question, you can use

documentation from anywhere in the chart if these sources do not provide the information you need. Although keep in mind questions related to the time of event.

The **Face Sheet** provides participant demographic information and admission and discharge information (dates, treating physician(s), discharge diagnosis(es),and ICD-9-CM codes). Also contains charges for certain medications, and tests.

The **Emergency Department (ED) Record** and **Emergency Medical Technician (EMT) or Ambulance Report** describe symptoms, dates and times of symptoms, vital signs, initial treatment during transportation to the hospital, ED treatment and response, and disposition. In the ED there will be a triage note from initial assessment of the patient, then notes from the nurse and a note from the physician. The triage note is particularly valuable for initial vital signs.

The **Admission History and Physical Exam** (H&P) is a detailed description of symptoms leading to admission, condition of participant on admission, current medication use, and past medical history; it also includes a physical exam, results of tests and procedures done in the ER or upon admission, provisional diagnosis(es), and treatment plan. Patients who stay in the hospital for < 24 hours may be designated as **Observation care** which is considered outpatient care even though it may be overnight in the hospital. For these stays, you may only see a short stay note which is the admission note and discharge note combined.

The **Discharge Summary** summarizes the entire hospitalization, including admission and discharge dates, treating physician(s), admission H&P, hospital course, treatments and procedures, and discharge disposition. (If the hospitalization is prolonged or if residents or attending physicians rotate while a participant is admitted, there may also be an **interim summary.**)

The **Death Summary** may replace or augment the discharge summary, in the event of a participant's death. It may contain, or be attached to, autopsy information or an autopsy report.

The **Consults** section contains typed or handwritten notes made by specialists (e.g., infectious disease, rehabilitation medicine) consulted while the participant was hospitalized. Handwritten consults may also be found in the physician progress notes section

Laboratory Results. This section will include chemistries and BNP levels.

The **Radiology** (or diagnostic tests) section contains reports of chest x-rays, VQ scans, echocardiograms, CTs, and other imaging procedures.

The **Operative** section contains operative and pathology reports and may contain autopsy reports.

Outpatient Records, if available, may be used if they can provide more information about the event in question. If within a week of the ED or hospital visit, then outpatient records may help to confirm recent signs and symptoms.

Rules on hierarchy and use of qualitative reports: The underlying purpose of these rules is to capture information rather than to miss it, as long as the information appears accurate.

If there are conflicting sources of information, take information in this priority: resident, cardiologist, attending physician, ED physician, nurse. However, if there is disagreement regarding diagnosis between physicians, the subspecialist for that diagnosis takes superiority. For example, for a pulmonary issue, the pulmonologist is considered more correct, but for a cardiac issue, the cardiologist should be more correct than the non-cardiologist.

Rules for Physical Exam and Symptoms:

In general the goal is to capture any presence of an abnormal exam finding. For signs and symptoms, any documented description of an abnormal finding by any physician is sufficient unless stated otherwise in the QXQ as at the time of event. In the case where an exam finding is specifically requested for any one point in time and there is disagreement about the presence of that physical finding at that specific time point (e.g., at the time of the event), take information in this priority: the pulmonologist (any type of note), the attending physician (any type of note) the resident, ED physician, and nurse. Time of event is meant to include approximately 24 hours after time of arrival or event onset if happened after arrival.

Please avoid using the following secondary sources to gather information, unless primary sources are incomplete or unavailable: physician orders, nurse's or multidisciplinary notes, vital sign logs, or physician progress notes, unless there is **no other way** to reconstruct the event.

Definitions of Terms

Some questions have response categories of "yes," "no," and "not recorded." If nothing is written down that definitely answers the question "not recorded" should be chosen. Be sure to follow the correct skip patterns, i.e.: follow form logic! The following table lists terms you may encounter in the medical record that, when in doubt, should be recorded on the form as "yes," "no," or "not recorded." (Obviously, the entire content of the event should be considered as well.)

Yes	No	Unknown
Present	Not present	Rule out(R/O)
Likely	Low probability	Suggestive
Apparent	Unlikely	Equivocal
Consistent with		Suspicious
Compatible with		Questionable
Definite		Possible
Probable		Uncertain
Highly suspicious		Reportedly
Presumed		Perhaps
Borderline		Could be
Thought to be		Might be
Minimal		May be
Representing		May represent
Mild or trace		

The table below contains time-of-day and length-of-time terms that you may encounter in the medical record and how they should be interpreted and/or recorded on the form. (Use 12-hour clock, not 24-hour clock).

If the medical record says this…	You record this…
[If no time is listed]	12:00p.m.
Middle of the night	1:00 a.m.
Early morning	6:00 a.m.
Morning	8:00 a.m.
Late morning	10:00 a.m.
Mid-day or noon	12:00 p.m.
Early afternoon	2:00 p.m.
Afternoon or mid-afternoon	3:00 p.m.
Late afternoon	4:00 p.m.
Early evening	7:00 p.m.
Late evening	11:00 p.m.
Midnight	12:00 a.m.
Several days	≥3 days
A few days	≥ 2 but < 4 days
Several hours	≥ 4 but < 6 hours
A few hours	≥ 2 but < 4 hours

HEART FAILURE is a condition in which the heart cannot maintain the blood supply required by tissues for oxygenation leading to an accumulation of fluid in the body tissues, including the lungs. Words that may be indicators of heart failure exacerbation include but are not limited to: acute heart failure (HF), acute decompensated heart failure(ADHF), decompensation of cardiac function, pump failure, cardiogenic shock, left ventricular failure, right ventricular failure, pulmonary edema, low-output heart failure, and high-output heart failure. Here we want to distinguish chronic stable heart failure from HF with progression or decompensation (acute decompensated HF). Statements like “volume overload” are NOT equivalent to heart failure but may be sufficient if the rest of the notes suggests HF decompensation or progression. However, the mention of CHF or pulmonary edema on only a chest x-ray without further documentation of HF during the hospitalization is not sufficient to define decompensated HF, as the pulmonary edema could have other causes such as renal failure. *Synonyms* for heart failure may include the following:

Alcohol Cardiomyopathy, Ischemic Cardiomyopathy (ICM), Amyloid Cardiomyopathy, Left ventricular failure, Apical Hypertrophic Cardiomyopathy, Left ventricular dysfunction (LVD), Biventricular failure, Peripartum Cardiomyopathy (PPCM), Cardiogenic shock, Pulmonary edema, Congestive heart failure (CHF) or HF, Pump failure, Congestive heart failure, Right ventricular failure, Cor Pulmonale, Restrictive Cardiomyopathy (RCM), Dilated Cardiomyopathy (DCM), Sarcoid cardiomyopathy, Idiopathic Cardiomyopathy, Viral Cardiomyopathy, Idiopathic hypertrophic subaortic stenosis (IHSS), Valvular cardiomyopathy, Infiltrative Cardiomyopathy, Hypertensive Cardiomyopathy, Hypertrophic Cardiomyopathy (HCM), Hypertrophic nonobstructive cardiomyopathy, Hypertrophic Obstructive Cardiomyopathy (HOCM).

SPECIFIC ITEMS

Event ID and event date are primarily for assisting the abstractor in confirming the medical record being abstracted matches the EEF form. Once these fields have been entered on the EEF they can be duplicated in the corresponding fields on the PHF using the "dup key" feature, if the forms have been entered in the same data session.

SECTION A: GENERAL INFORMATION

Item 1. Choose the one that applies. Enter "1" if the event was in hospital only without a visit to the same hospitals ED, "2" if ED visit only, "3" for both ED visit followed by a hospitalization, "4" if observation care only without a prior ED visit, or enter "5" if an observation visit only without prior ED visit. Observation care is an administrative term for certain overnight visits (usually <24 hours) to the hospital that do not meet criteria to be a full admission. For observation visits, you may see a "short stay summary" or "admit to obs". If you are not sure if an overnight visit is observation or full admission then assume that it was a full admission and choose either "1" or "3". If response is "2" (ED) skip to Item 3. Patients that are In hospital only or observation care only without a ED visit first, will have usually been admitted as a direct admit from a physician's office or for elective surgery/procedure. Answer "6" for unsure/unknown if it is unclear whether as to whether the visit was to the ED, observation or inpatient.

Item 2. Record the date of arrival at the hospital; if includes an ED visit then it would be date of arrival at ED or the first date recorded for this visit. Enter as mm/dd/yyyy.

Item 2a. Record the time of arrival at the emergency department or hospital. If time provided in military time then convert to time in AM or PM and then choose '1' for AM or '2' for PM. If uncertain of time of arrival, then provide closest time available on the day of arrival. ED triage would likely be the earliest time. Other places to consider looking for the earliest time could be the RN notes, or time of 1st lab work. If no time available from the day of arrival, then give "=" across all blanks.

Item 2b. Record the date of admission to the hospital. Enter as mm/dd/yyyy. This should be on the admission history and physical and the discharge summary as the "date of admission". If date not available or this is an ED visit only, then give "=" across all blanks. Look for validation that the date of admission is correct on the H and P, especially on hand written notes in which the admission date is not automatically filled in. Admission date may also be on the face sheet.

Item 3. Record the date of discharge (or date of death). Enter as mm/dd/yyyy. If the participant was transferred from acute care to rehabilitation (even if in the same hospital), count the date of transfer as the discharge date. If the patient died during this hospitalization, then record the date of death.

Sources: Discharge or death summary or autopsy report.

Item 3a. Record the time of discharge or death. If time provided in military time then convert to time in AM or PM and then choose '1' for AM or '2' for PM. If uncertain of time of discharge, then provide closest time available on the day of discharge. RN discharge note would likely be the latest and most accurate time. If no time available from the day of discharge, then give "=" across all blanks. Do not use time from the physicians discharge note as this is likely the time the doctor dictated the note.

For questions 4 and 5, you will be entering an ICD code. There is one hospital that does not put periods in the ICD codes, so you will need to add them. All ICD

codes are in the format XXX.X or XXX.XX or XXX, so if there is no period then add one after the first 3 places.

Item 4. Primary admitting diagnosis code: Enter the primary admitting diagnosis code. This is the ICD-9 code assigned to the main reason for the hospital admission or ED visit. The primary admitting diagnosis is the main reason a patient is admitted, however once admitted and tested the original diagnosis may change or be ruled out. It may be the same as the primary discharge diagnosis code, but not always. ED visits that do not result in admission will only have discharge codes, since the patient was not admitted. If this is an ED visit only, then give "=" across all blanks. Be sure to list the admitting diagnosis code from the face sheet. Occasionally if there is not a face sheet then you may see an assigned ICD code on the ED report, or H&P or other sources listed below. Note: Do not assign an ICD code to the admitting diagnosis, if there is no ICD code assigned already then enter "=". Do NOT use the codes listed on the 2nd page of the HCHS/SOL Medical Records Documents Shipping Cover Form.

Sources: Face sheet, ED report, H&P, hospital transfer documents, physicians' notes.

Item 5. Primary discharge diagnosis code. This is the ICD-9 code assigned to the main reason for the hospitalizations as determined at the time of discharge, usually found on the ICD-9 summary page for every hospital admission. In the absence of an ICD-9 summary page, refer to the discharge summary. The admission diagnosis and discharge diagnosis may not be the same. The primary discharge diagnosis will be conclusive, based on all testing and treatment per admission or ED visit. Be sure to list the discharge diagnosis code from the face sheet. Occasionally if there is not a face sheet then you may use an assigned ICD code if there is one on the discharge summary or other sources listed below. If there is not, an actual ICD-9 code then do not code diagnoses yourself, and instead put '=' if there are no ICD-9 codes present. Do NOT use the codes listed on the 2nd page of the HCHS/SOL Medical Records Documents Shipping Cover Form.

Sources: ICD summary page, Face sheet, ED report, hospital transfer documents, physicians' notes.

Item 6. Emergency medical service unit transport? Record yes (Y), or no/NR. Record No/NR if the information is not specified in the documentation provided or the patient was not transferred by EMS. **Note**: A participant may travel to the hospital for an elective admission by ambulance because of a pre-existing condition or disability that requires special transportation (so the answer here is "Y"). An EMS unit may be public or private and staffed by EMTs or paramedics. ("EMS Unit" includes helicopters but excludes private vehicle or taxi.)

Sources: Face sheet, EMT/ambulance report, ED report, discharge or death summary, H&P.

Item 7. Transferred from another hospital? Record yes (Y), or no/NR. Record No/NR if the information is not specified in the documentation provided or the patient was not transferred from another hospital. "Another hospital" means an acute-care facility to which the participant had been admitted. If the participant was transferred from a nursing home, skilled care facility, rehabilitation center, or another hospital's ER or outpatient clinic, answer "no" to this question. If you answer "yes" to this question, you may need to complete a separate HCHS/SOL form for the other hospitalization -- if the participant was admitted to the other hospital for a possible event (cardiac, pulmonary or stroke) or suffered such a possible event while in the other hospital.

Sources: EMT/ambulance report, ED report, discharge or death summary, H&P, hospital transfer documents, physician's and/or nurses' notes.

Item 8. Ever a "no-code" or "DNR" (do not resuscitate)? "Ever" means either in the ED or at any time during the admission for this visit only. "No code" means that no cardioversion, intubation, or mechanical ventilation will be used in a life-threatening emergency. If on the face sheet, it reports that there are no advance directives, then can answer NO here if you do not latter see evidence of DNR. IF see in the MDs note "Disposition: FC" then can answer NO as FC stands for "Full Code". Synonyms for DNR include: Supportive care only, DNR (do not resuscitate), comfort measures only, palliative measures only, chemical care only, or "no extreme or heroic efforts". This is often a required administrative question that is asked of everyone admitted to hospital so it may be in the admitting nurse's note.

Sources: Discharge or death summary, ED report, H&P, physician orders or notes.

Item 9. Alive at discharge? Enter Yes or No/NR. This information can be found in the discharge summary or face sheet, or on the ED report (if patient died in the ED).

B. SIGNS AND SYMPTOMS

I. Signs and Symptoms

Items 10a.-d. refer to signs and symptoms that occurred at or around the time of the event. . For the purpose of items 11a.-g, When the onset of symptoms occurs prior to arrival at the hospital then record YES if sign or symptom is reported in the medical record at time of ED, or hospital arrival or at an earlier evaluation immediately preceding admission (e.g. a note from a physician's office prior to a direct admit to the hospital). For events that began after admission to the hospital then record YES if signs or symptoms are present around the time of onset of HF. Record NO if there is clear indication that a condition was NOT present. Record NOT RECORDED if there is no documentation in the medical records for the item or if it is unclear based on the medical record that a condition was or wasn't present. In general, any documented description by any physician or nurse of an abnormal finding at the time of the event (although it needs to be new or increasing) for items 11a.-g. is sufficient to record YES (hierarchy rules do not apply here). At the time of event should generally be within approximately 1 day of presentation. If not sure of the timing of the signs or symptoms then use your judgment as to whether you think the signs or symptoms were temporally related to the event.

Signs and Symptoms Associated with This Episode

Item 10a. Paroxysmal nocturnal dyspnea (PND)? - Record YES if shortness of breath at night or waking up short of breath (paroxysmal nocturnal dyspnea, PND) is noted in the medical record around the time of the event. Paroxysmal nocturnal dyspnea is a complaint of waking up in the middle of the night feeling shortness of breath. Classically, people sit straight up in bed and open a window or turn on a fan to try and get "air". This is usually due to accumulation of fluid in the lungs from left sided heart failure, following redistribution of blood in the supine position. Paroxysmal nocturnal dyspnea is often abbreviated as PND. Waking up short of breath (SOB) is sufficient to record YES. Note: Orthopnea is not a synonym for PND.

Item 10b. Orthopnea reported? Record YES if the patient has new or increasing difficulty breathing while lying down (orthopnea). Orthopnea is shortness of breath when lying

down that is relieved by sitting up or elevating their head with pillows or a recliner. People with orthopnea usually state that they feel short of breath lying flat so they sleep with multiple pillows or in a recliner chair. This might be written in the medical record in terms of number of pillows needed to sleep, i.e. "3 pillow orthopnea". Record NO if it is stated the patient did NOT have orthopnea, otherwise record NOT RECORDED if it is not mentioned as being present or absent.

Item 10c. Shortness of breath? Record YES if dyspnea (shortness of breath, SOB) is reported in the medical record at the time of hospital arrival, or at an earlier evaluation (e.g. at physician's office for a patient directly admitted to the hospital), or at any time in the hospital. Record YES if the patient complained of shortness around the time of event onset. If the only evidence is for tachypnea, which may be defined as respiratory rate (RR) >22, then record NO for this question. This question is trying to determine whether the patient complained of shortness of breath, and not whether they appeared short of breath. If a patient arrived on a ventilator, record YES for this item. If it is stated that there was no evidence of dyspnea then record NO. If there is conflicting information or it is not noted whether there was SOB then record NOT RECORDED.

Item 10d. dema? (leg swelling-unilateral/bilateral) Edema refers to the accumulation of fluid in extra-vascular spaces of body tissues. Peripheral edema here refers to unilateral or bilateral swelling of the arms and legs. On physical exam, the thumb is pressed into the leg to see if an indentation remains; if this is seen, it is called "pitting edema". Lower extremity edema can be unilateral or bilateral. Peripheral edema is not the same as pulmonary edema, which is the accumulation of fluid in the extra-vascular spaces of the lung. Record YES if the patient complains of leg swelling or edema at the time of the event. Record YES if unilateral or bilateral. Note that this would be a complaint rather than a physical exam finding. Record NO if it is recorded that there was no edema by history. Record No if the edema is only described as "trace".

Synonyms: LE edema, peripheral edema, sacral edema, scrotal edema, generalized edema, swollen ankles, 1+, 2+, 3+, 4+ pitting (edema), nonpitting edema, anasarca

Item 10e. Hypoxia? Record YES if hypoxia (low level of blood oxygen) is stated in the record. Do not try to interpret oxygen values yourself, but you may infer, for example, from a decision to administer oxygen due to low oxygenation, although do not include oxygen that is provided simply because they are a cardiac patient. Record YES if the patient has a documented *new or increasing oxygen requirement*. This may be documented in the nursing or doctor notes that suggest that: the room air (RA) pulse oximetry (pulse ox) or saturation (sat) is <90%; or that the patient was placed on oxygen (nasal cannula or face mask) for low pulse oximetry or required intubation and mechanical ventilation. Oxygen is sometimes given (through nasal cannula or face mask) as empiric treatment even when there is no hypoxia; record NO if there is no evidence of hypoxia even though oxygen was given.

Item 10f. Dyspnea at rest or tachypnea? Dyspnea at rest refers to difficulty breathing that is not related to physical exertion. YES if dyspnea at rest is noted during the H&P anytime or during hospitalization, otherwise record No or N/R. Also, if a patient is on a ventilator, or observed to be tachypneic at rest or while talking (have a fast respiratory rate, e.g., $\geq$ 22 breaths per minute), then answer YES. If dyspnea is listed without any qualifier, then assume the patient has dyspnea on exertion AND not dyspnea at rest unless there are other indications of dyspnea at rest. If it is stated that the patient did not have dyspnea or had dyspnea on exertion only then answer NO.

Item 10g. Dyspnea with walking or on exertion? Record YES if dyspnea while walking or on exertion (e.g.: climbing) is noted in the ED, or on the H&P or anytime during hospitalization. This will most likely be found in the patient history as something like 'shortness of breath with climbing stairs'. Here we mean at least dyspnea on exertion, so those with dyspnea at rest will also have dyspnea on exertion. Also, if observed to be tachypneic with exertion then answer, 'YES'. If dyspnea is listed without any qualifier, then assume the patient has dyspnea with exertion (e.g., walking, climbing, etc.), BUT not dyspnea at rest. **Note** - if dyspnea at rest is recorded (item 10f.), then the item for dyspnea with exertion - will automatically be recorded as 'YES'. If dyspnea is described with minimal exertion (e.g., change in position, eating, transferring from bed to chair), then record YES to the exertional dyspnea item.

II. Physicians' Diagnoses

The goal of these questions is to determine whether ***a*** reason for this hospitalization may be heart failure. Focus on the admitting or differential diagnoses if they were not disproven later on and on the final discharge diagnosis. If upon review of the doctor's notes there is no indication that any of these conditions was a reason for this hospitalization, record NO. By "a reason for this hospitalization" we mean not only "a reason for admission to the hospital" but also if instead there was evidence of new onset or progression during the hospital course.

Item 11. Evidence in the doctor's notes that the reason for this event was an exacerbation of heart failure? The goal of this question is to determine whether ***a*** reason for this hospitalization ***may be*** heart failure. Focus on the admitting or differential diagnoses rather than just the final discharge diagnosis. If upon review of the doctor's notes there is no indication that heart failure was a reason for this hospitalization, record NO. By "a reason for this hospitalization" we mean not only "a reason for admission to the hospital" but also evidence of new onset or progression during the hospital course.

Words that may be indicators of heart failure-related hospitalization include but are not limited to: congestive heart failure (CHF), acute heart failure (AHF), acutely decompensated heart failure (ADHF), increasing circulatory congestion, inadequate tissue perfusion, decompensation of cardiac function, pump failure, left ventricular failure, right ventricular failure, pulmonary edema, low-output heart failure, high-output heart failure, acute decompensated heart failure. The mere presence of heart failure is insufficient, as it may be chronic and not an active problem during this hospitalization. Statements like "volume overload" are NOT equivalent to heart failure but may be sufficient if the rest of the notes suggest the patient was hospitalized for HF decompensation or progression. However, the mention of CHF on only a chest x-ray without further documentation of CHF during the hospitalization is not sufficient.

Item 12. New onset or progressive signs/symptoms of heart failure prior to presentation in ED or hospital? Record YES if evidence in the medical record states new onset or progression of symptoms of heart failure immediately prior to this hospitalization (i.e.: at home or in doctor's office or clinic preceding presentation to the ED or hospital admission). Answer NO if signs and symptoms of this exacerbation began after admission to the hospital. Answer NR if signs and symptoms of the exacerbation began after admission. As an example, if a patient with HF was admitted to the hospital for surgery and developed pulmonary edema post-operatively then the answer here would be NO since the exacerbation began after admission. However, if the same patient had an outpatient surgery, and is being admitted for post-operative pulmonary edema then the answer is YES.

Item 13. Did the physician's note or discharge summary indicate the presence of any of the following specific types of heart failure (check all that apply). Check all that apply even if they are not active during this hospitalization, but a good history is include.

Item 13a. Diastolic heart failure is the inability of the heart to relax properly between beats (diastole), making it difficult for the ventricles to fill completely with blood from the atria. This can occur when the heart muscle bulks up due to overwork or other causes or when the heart muscle stiffens and loses it flexibility. Diastolic dysfunction must be explicitly described or documented in order to select "Y"(YES)". Synonyms include "diastolic LV dysfunction", "impaired LV relaxation", "impaired LV compliance", "impaired LV diastolic filling", "reversed E-A ratio", "late diastolic filling", "stiff ventricle", "abnormal mitral annulus tissue Doppler signal", "pseudonormalization of transmitral Doppler flow", "restrictive filling pattern", "Grade 1 diastolic dysfunction", "Grade 2 diastolic dysfunction", and "Grade 3 diastolic dysfunction". If left ventricular compliance or relaxation is normal, code "NO/NR" for diastolic dysfunction. An echo report or other imaging report that describes diastolic function outranks a clinical description of diastolic dysfunction. If upon review of the doctor's notes there is indication that diastolic heart failure was a reason for this hospitalization, record YES otherwise record NO/NR.

Item 13b. Systolic heart failure is the inability of the heart to pump blood efficiently due to weakening and enlargement of the ventricles. Systolic heart failure is usually caused by coronary artery disease, high blood pressure, or valvular heart disease. A dilated left ventricle or right ventricle alone is not sufficient to select "Y"(YES)". An estimated LVEF of ≤ 45% is sufficient to define LV systolic dysfunction. If upon review of the doctor's notes there is indication that systolic heart failure was present, record YES otherwise record NO/NR.

Item 13c. Right-sided heart failure is failure caused by damage to the heart's right-sided chambers. When the right side loses pumping power, blood backs up in the body's veins. This usually causes swelling in the abdomen (ascites), legs and ankles. Right-sided HF usually occurs as a result of chronic lung disease, or valvular heart disease, but may also be due to a progression of left sided HF to also affect the right side. Here we are looking for a notation in the doctor's notes that the patient has right sided HF, even if it is also noted that they have left sided HF too.

Cardiomyopathy is a serious disease affecting the heart. It involves reduced function in heart muscle. There are multiple causes including viral infections. In cardiomyopathy, the heart muscle becomes inflamed and weakened, causing heart failure. Cardiomyopathy can be classified as primary or secondary. Primary cardiomyopathy can't be attributed to a specific cause, such as high blood pressure, heart valve disease, artery diseases or congenital heart defects. It may also be called idiopathic if no specific cause is identified. Secondary cardiomyopathy is due to specific causes. Most cardiomyopathy is due to ischemia. Other types of cardiomyopathy are associated with diseases involving other organs as well as the heart, such as in sarcoidosis. There are three main types of cardiomyopathy – dilated, hypertrophic and restrictive. Treatment includes evaluation and treating the underlying cause.

Item 13d. Ischemic cardiomyopathy? This is heart failure due to significant coronary artery disease. This may be abbreviated as "ICM".

Item 13e. Idiopathic/dilated cardiomyopathy? This is heart failure due to unknown causes. This may be abbreviated as "DCM". Synonyms include "nonischemic dilated cardiomyopathy" without other qualifiers (or mention of another cause for the cardiomyopathy). However, "dilated ischemic cardiomyopathy" should be recorded as

YES for 13.d. and No for 13e.

Item 13f. Myocarditis is an inflammation of the heart muscle, the middle layer of the heart wall. Myocarditis may cause a variety of signs and symptoms, including chest pain, heart failure and abnormal heart rhythms. Myocarditis is usually caused by a viral infection. Treatment for myocarditis depends on the underlying cause. Record YES if evidence in the medical record to indicate that myocarditis was the reason for this hospitalization, otherwise record No/NR.

Item 13g. Peripartum cardiomyopathy is a form of dilated cardiomyopathy in which no other cause of heart dysfunction (weakened heart) can be identified. It is a rare disorder and is diagnosed within the final month of pregnancy or within 5 months after delivery. Record YES if evidence in the medical record to indicate that peripartum cardiomyopathy was the etiology of heart failure, otherwise record No/NR.

Item 13h. Other specific cardiomyopathy/heart failure? This is heart failure due to some other cardiomyopathy that is not included in the above types. Look specifically for "cardiomyopathy" or a specific type of heart failure (e.g., hypertensive heart failure, hypertensive cardiomyopathy, alcohol-related cardiomyopathy, cardiac sarcoidosis, cardiac amyloidosis, amyloid cardiomyopathy, etc.). "Congestive cardiomyopathy", "primary cardiomyopathy" or "severe cardiomyopathy" do not count as other specific cardiomyopathy/heart failure. Record YES if evidence in the medical record to indicate that other specific cardiomyopathy/heart failure was the reason for this hospitalization, otherwise record No/NR.

Item 13h.1. If other cardiomyopathy, specify type by filling in the comments section provided.

III. Prior cardiac testing

Item 14 Was cardiac imaging performed prior to this hospitalization? Review the physician's notes, history and physical, and the discharge summary for evidence of previous cardiac imaging with a quantitative or qualitative ejection fraction. Do NOT report here on tests performed during this hospitalization. Examples of imaging that are sufficient for a YES response to item 8 include: echocardiogram, e.g., transthoracic echocardiogram (ECHO), transesophageal echocardiogram (TEE), stress echocardiogram; radionuclide ventriculogram (RNV or MUGA [multiple gated blood pool acquisition] scan); contrast ventriculogram (LV gram, performed during a left heart catheterization or coronary angiogram); computed tomography (CT) scan; cardiac magnetic resonance imaging (MRI) scan. If there is evidence that the patient did not have an echocardiogram, MUGA (RNV), LV gram prior to this hospitalization, but did have a previous CT or MRI for non-cardiac reasons, record No/NR for item 14, and skip to 15. If there are statements in the medical record that suggest no previous cardiac imaging was done or there is no evidence whether or not cardiac imaging was performed, record No/NR and skip to item 15. If the medical record indicates that cardiac imaging was done but no EF or qualitative description of LV function is provided, record No/NR and skip to item 14d. Please note that the answers to questions 14a-14d should be for the same test, and not for multiple different tests.

Item 14a. Lowest LV ejection fraction recorded? Both 14a and 14b should not be answered only one or the other, so if you answer 14a with a numeric value then skip 14b, whereas if you enter == for 14a then you may answer 14b if a qualitative description is provided. If there was evidence of prior cardiac imaging or mention of prior ejection fraction by history, record the lowest LV ejection fraction (LVEF) found among the notes

and/or all the different types of imaging tests, regardless of the year of this past study. If a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if “30-35%”, record “30”). If a greater than (>) or less than (<) description is used, record the next numeric value (e.g., if ">55%", record 56; if "<20%”, record “19”). Record === if EF is not available. However, if the physician’s interpretation states “normal” and a normal range is indicated on the report, record the lowest value of the normal range (e.g., if the normal range is between 55-90%, record “55”).

If a numeric ejection fraction is not available but the systolic function is described in qualitative terms, record === for item 14a.and complete item 14b. If a numeric value for systolic function is available then skip 14b, and answer 14c. In general, we are interested in the lowest numeric LVEF assessment - more than a qualitative description of the LV systolic function; therefore, an older report with an estimated LVEF takes precedence over a more recent report with only a qualitative description if the qualitative description matches the quantitative estimate. For example, if a chart describes both an echocardiogram report from 12/2010 reporting “LVEF 35-40%” and a cardiac catheterization report from 2011 reporting “severe LV dysfunction”, record “35” (obtained from the older ECHO) for item 14a, skip item 14b, enter the number of months from the hospitalization date to the test date for item 14c and “ECHO” for item 14d. However, since the goal is to capture the worse documented LV function, if a qualitative description suggest more severe LV dysfunction than a given quantitative assessment, then provide == for 14a, and answer 14b (e.g., if the record describes both a history of “severe” LV dysfunction and a past estimated LVEF of “40%”, skip 14a., and record “severe (S)” in 14b. In general, different hospitals use different cutoffs to describe the severity of LV dysfunction (especially for mild and moderate severity). If you have two different reports—one describing LV dysfunction in percentages and the other by qualitative descriptors—use the following scheme to compare the quantitative and qualitative descriptions to determine which record describes worse LV function (that is, which description should be recorded):

- Normal = LVEF ≥ 50%
- Mild LV dysfunction = LVEF 45-50%
- Moderate LV dysfunction = LVEF 35-44%,
- Severe LV dysfunction = LVEF<35%.

Comment: *A viewable formal report is more valuable than any statement/remark quoted anywhere else in the chart.*

Item 14b. Qualitative description of ejection fraction? Record the qualitative description of the cardiac systolic (LV) function as either “N for normal”, “M for mildly reduced”, “D for decreased moderately”, or “S for severely reduced”, “O for None of the above” or “U for Unsure-not available”.

Item 14c. In the boxes provided, record the time in number of months since the test was performed for lowest ejection fraction to the date of hospital admission. If it is less than 30 days, then use 0.1-0.9 to describe the fraction of the month involved, realizing that 0.1 represents 3 day blocks.

Item 14d. Type of imaging from which ejection fraction was obtained. In the box provided, record the number identifying the type of imaging exam done from the below list. ECHO refers to transthoracic echocardiogram (ECHO), transesophageal echocardiogram (TEE), stress echocardiogram. MUGA stands for multiple gated blood pool acquisition scan. Catheterization with ventriculography may also be described as

an LV gram. CT refers to a coronary CT scan with LV function measured. MRI refers to cardiac MRI with LV function measured.

1.ECHO
2.MUGA
3.Catheterization with ventriculography
4.CT
5.MRI
6.Other
7.Unknown

C. MEDICAL HISTORY

The purpose of this section is to record relevant past medical history items. "History of" (h/o) is synonymous with a documented history of the disease that was present as a "pre-event" diagnosis prior to the hospitalization, e.g., most often listed under past medical history section of the history & physical note. History is defined as more than 1 week prior to the event. So for example, if the record indicates that the only previous event was within 1 week, this would not be considered as a history. The patient's past history may be found in the physician's history and physical section, the admission note, the discharge report, or the ED report of the medical records. Conditions noted as newly present with the current hospitalization for which there was not a prior diagnosis should not be considered historical diagnosis and should not be counted in this section.

15a-r. Record YES if evidence in the medical record of a prior history of diseases listed in Items 15a-r. Otherwise record NO/NR.

Item 15a. Diagnosis of heart failure? Review the physician's notes, history and physical, and the discharge summary for evidence of a prior diagnosis of heart failure. "Prior" refers to a physician's diagnosis prior to the onset or worsening of symptoms that brought the patient to the hospital. For the purpose of this question, a mention that the patient has a history of heart failure diagnosed and treated as an out-patient is sufficient evidence to record YES to 15.a. Evidence of a prior physician diagnosis of heart failure is required to record YES to item 15.a. Record NO/NR if the patient does not have a history of heart failure or if there was no mention of previous heart failure in the medical record. History is defined as more than 1 week prior to the event. If the record indicates that the only previous heart failure was within 1 week, this would not be considered as a history of heart failure. If, after reviewing the medical record, it is unclear as to whether there was a history of heart failure or there is contradictory evidence, record NO/NR. Note: If 15a.= N then skip 15b & 15c.

Synonyms for heart failure include:

Alcohol Cardiomyopathy
Amyloid Cardiomyopathy
Apical Hypertrophic Cardiomyopathy
Biventricular failure
Cardiogenic shock
CHF or HF
Congestive heart failure
CorPulmonale
Dilated Cardiomyopathy (DCM)
Idiopathic Cardiomyopathy
Idiopathic hypertrophic subaortic stenosis (IHSS)
Ischemic Cardiomyopathy (ICM)
Left ventricular failure
Left ventricular dysfunction (LVD)
Peripartum Cardiomyopathy (PPCM)
Pulmonary edema
Pump failure
Right ventricular failure
Restrictive Cardiomyopathy RCM)
Sarcoid cardiomyopathy
Viral Cardiomyopathy
Valvular cardiomyopathy

Infiltrative Cardiomyopathy
Hypertensive Cardiomyopathy
Hypertrophic Cardiomyopathy (HCM)
Hypertrophic nonobstructive cardiomyopathy
Hypertrophic Obstructive Cardiomyopathy (HOCM)

Note: *If records only mention 'volume overload', do not use as a synonym for heart failure.*

Item 15b. Prior hospitalization for heart failure? Review the physician's notes, history and physical, and the discharge summary for evidence of a prior HOSPITALIZATION for heart failure. Unlike 15.a., a history of heart failure diagnosed and treated as an out-patient is NOT sufficient evidence to record YES. There may be evidence of a prior physician diagnosis for heart failure (item 15.a.=YES) and no evidence that the patient was hospitalized for this diagnosis (item 15.b.=No). If the patient was admitted for heart failure at another hospital and transferred to the current hospital within 1 week, record NO/NR for item 15.b.

Item 15c. Treatment for heart failure? Review the physician's notes, history and physical, and the discharge summary for evidence of previous treatment for heart failure. Treatment should include either in-patient or outpatient treatment. Examples of treatment that would be considered YES for item15.c include: (1) Medications that were noted to be for HF. These may include diuretics, angiotensin converting enzyme inhibitors (ACE inhibitors), angiotensin II receptor blockers (ARBs), beta-blockers, digitalis, aldosterone blockers, hydralazine, nitrates, intravenous inotropes (dobutamine, dopamine, milrinone), intravenous vasodilators (e.g., nitroglycerin, nitroprusside, nesiritide), anticoagulants; (2) Use of medical devices such as implantable cardiac defibrillator, intraaortic balloon pump (IABP), left ventricular assist device (LVAD), ventricular assist device (VAD), biventricular assist device (BiVAD), hemofiltration. Since some medications and devices may be given for various conditions (e.g. diuretics for hypertension), look for the stated indication of HF. Do not record YES if the stated indication is for conditions other than heart failure. If, after reviewing the medical record, it is unclear as to whether there was a previous treatment for heart failure or there is contradictory evidence, record NO/NR.

Item 15d. Valvular heart disease? Record YES if the patient has a history of valvular heart disease or prior valve surgery. Valve surgery includes any surgical procedure to replace or repair a valve in the heart (aortic valve, mitral valve, tricuspid valve, pulmonic/pulmonary valve). Valve replacement may be described in terms of the type of prosthetic valve without specific reference to valve surgery; e.g., mechanical valves such as St. Judes, Bjork-Shiley, ball-in-cage, tilting disc, etc.; bioprosthetic valves such as porcine valve, pig valve, cadaveric valve, tissue valve, Ross procedure, etc. Valve repair may be described using terms such as annuloplasty ring without specific reference to valve surgery. Record YES if the patient has a history of any type of valve repair or replacement.

For the purposes of this item a history of aortic stenosis (AS) , aortic regurgitation, mitral stenosis (MS), mitral regurgitation (MR), mitral valve prolapse (MVP), tricuspid valve disease (including stenosis, regurgitation), or pulmonary valve disease are sufficient to record YES. If the patient does not have a history of valvular heart disease, record NO/NR. However, an explicit statement about a history of valvular heart disease (in general or a specific valve disease) in the medical record is required to record YES. Echocardiogram results alone reporting these findings are not sufficient.

Item 15e. Rheumatic heart disease (RHD)? Record YES if the patient has a history of

rheumatic heart disease (RHD). Rheumatic heart disease is the most common cause of mitral stenosis. However, an explicit statement about a history of rheumatic heart disease in the medical record is required to record YES. Record NO/NR if the patient does not have a history of rheumatic heart disease or if there is no information about RHD in the record. History of "rheumatic fever" is not sufficient. If newly diagnosed during this hospitalization, consider this as a historical diagnosis (record YES) as it will only be newly discovered but would have been present since childhood.

Item 15f. Congenital Heart Disease? Record YES if the patient has a history of congenital heart disease. Record NO/NR if the patient does not have a history of congenital heart disease. Common congenital heart defects include: Ventricular septal defect (may be abbreviated VSD), Atrial septal defects (ASD), patent foramen ovale (PFO), congenitally malformed valves (e.g., bicuspid aortic valve), Ebstein's anomaly, patent ductus arteriosus (PDA), and other cyanotic congenital heart disease like Tetralogy of Fallot (TOF), pulmonary atresia, tricuspid atresia, transposition of the great arteries or vessels (TGA or TGV), single-outlet ventricle, double-inlet ventricle, etc. If newly diagnosed during this hospitalization, consider a historical diagnosis (record YES).

Item 15g. Coronary heart disease (ever)? Record YES if the patient has a history of coronary heart disease (CHD), coronary artery disease (CAD), or ischemic heart disease (IHD). Record NO/NR if a history of CHD, CAD, or IHD is ruled out. Record NO/NR if patient only has heart murmur. Also record YES to item 15g. if there is a history of any of the following conditions:

Angina
Angina pectoris
Crescendo angina
Atherosclerotic cardiovascular disease
Atherosclerotic heart disease
Coronary atherosclerosis
Coronary insufficiency
Myocardial infarction (MI)
Nonobstructive coronary atherosclerosis
Coronary artery bypass graft (CABG) surgery
Percutaneous transluminal coronary angioplasty (PTCA)
Coronary angioplasty
Directional coronary angioplasty (DCA)
Percutaneous coronary Intervention (PCI)
Coronary atherectomy
Prinzmetal angina
Stable or chronic angina
Unstable angina
Variant angina
Anginal equivalent
Syndrome X
Acute coronary syndrome

Item 15h. Coronary heart disease (within year)? See instructions and definition for item 15g. Record YES if the patient has an event of any of the conditions indicated in item 15g that is within one year of the current hospitalization under consideration. Also record YES if the patient has known coronary heart disease and underwent any relevant testing for coronary heart disease (e.g., stress test or cardiac catheterization) within the one year AND the results were abnormal. However, if the patient has had coronary heart

disease for more than a year, but there has not been an active related problem (i.e., has stable CHD with *no* significant symptoms like angina or coronary event like MI), then record NO/NR. Of note, echocardiograms and right heart catheterizations are not relevant tests for CAD. For example, if the patient has documented long standing CHD but no event (listed in 15g) within the past year, record "NO" to 15h, and "YES" to 15g.

Item 15i. Angina? A squeezing or crushing pain that usually starts in the center of the chest behind the breastbone and may spread to the arms, neck, jaw, or back. The pain can be mild, moderate, or severe. It is caused by reduced oxygen to the heart, usually from poor blood supply. The pain of angina is usually brief. It often, though not always, appears when participants are physically active or emotionally stressed and is relieved in a few minutes with rest. However, angina that has progressed may also occur at rest. The pain may radiate to the back, left arm, or jaw. Angina may be accompanied by shortness of breath, sweating, nausea and dizziness. Record YES if the medical record mentions any of the synonyms listed below. If the patient is currently taking nitroglycerin (NTG) or calcium channel blockers for chest pain record YES. Additional statements in the medical record that should be considered as YES to this item include: substernal pressure, pain, tightness or burning distress precipitated by exercise or excitement and/or relieved by rest or nitroglycerin (NTG). Statements such as "no history of angina" or "no history of heart disease" should be considered as NO/NR. "Chest pain" not otherwise specified is not sufficient (record NO).

Synonyms or terms that describe angina include:

Angina, crescendo angina, atypical angina, angina equivalent,
angina pectoris
stable angina
chronic ischemic heart disease
coronary insufficiency
impending infarction
pre-infarction angina
unstable angina
sub-endocardial ischemia
microvascular angina
angina, NOS
anginal syndrome
acute coronary syndrome
arteriosclerotic heart disease
chronic coronary artery insufficiency
chronic myocardial ischemia
chronic ischemic heart disease
ischemic heart disease, NOS
syndrome x

OR,
nocturnal (also called variant or Prinzmetal) angina, which occurs when a person is at rest, usually at night, and is associated with acute myocardial infarction, severe arrhythmias, and sudden death

Item 15j. Myocardial infarction? Myocardial infarction occurs when an area of the heart is deprived of necessary oxygen-supplying blood, and the lack of oxygen causes injury or death to that part of the heart. *Synonyms* or terms that describe myocardial infarction (MI) include: acute myocardial infarction (AMI), heart attack, cardiac infarction, coronary

artery embolism, coronary artery occlusion, or coronary artery rupture, sub-endocardial infarction, infarction of any wall segment of the heart or microinfarct of the heart. Record YES if there is evidence of a history of acute myocardial infarction. Record NO/NR if prior MI only reported on an ECG and not otherwise mentioned in the history.

Item 15k. Atrial fibrillation/atrial flutter? Record YES if evidence of history of atrial fibrillation, a condition of rapid, uncoordinated contractions (350–600/minute) of the muscles in the atria or atrial flutter ("A-flutter" or "AF"), a condition of organized, rapid contractions (200–400/minutes) of the atria. An ECG may be read as showing flutter waves (has a sawtooth appearance) which is adequate to record YES. AF (referring to both conditions) may be persistent or intermittent and may be symptomatic or asymptomatic. It is a risk factor for stroke and often anti-coagulation is prescribed to prevent stroke. Record YES if there is evidence of history in the medical record of either atrial fibrillation ("a fib") or atrial flutter ("a flutter"). Do NOT include here "supraventricular tachycardia (SVT)", and "paroxysmal atrial tachycardia (PAT)".

Note: Record YES if evidence of history of ablation to treat atrial arrhythmias. Otherwise record NO/NR. Ablation may be a surgery or non-surgery in which something is destroyed, however here record YES for a heart related ablation which is used to treat arrhythmias (specifically atrial fibrillation/flutter). It is used to treat many different types of arrhythmias by "disconnecting" the pathway of the abnormal rhythm. It may be referred to as a radiofrequency ablation. The surgical procedure for ablation is called MAZE procedure, modified MAZE procedure, or minimally invasive surgical ablation.

Item 15l. Heart block or other bradycardia? Bradycardia is defined as heart rate < 60 bpm, although elite athletes can have normal heart rates as low as the 40 bpm. A mention in the medical record by the physician of heart block, high degree atrioventricular (AV) block, severe bradycardia, symptomatic bradycardia or severe sinus bradycardia (heart rate <40 bpm) is required to record YES to 15l. Other terms if found in the patient's history, that are sufficient to record YES to this item include third-degree AV block, complete heart block, second-degree AV block, Type I second-degree AV block (Wenckebach/Mobitz I), Type II second-degree AV block (Mobitz II), AV block with low ventricular response, sick sinus syndrome (SSS), and tachybrady (tachycardia-bradycardia) syndrome . Record NO/NR if there is only sinus bradycardia of 40-60 bpm.

Item 15m. Ventricular fibrillation or tachycardia? Record YES if history of ventricular fibrillation (VF or V. Fib) or ventricular tachycardia (VT or V. Tach). VF is uncoordinated movement of the ventricle such that there is no effective contraction, and it always results in a cardiac arrest. VT is rapid contraction of the ventricle which may be persistent or intermittent and may be symptomatic or asymptomatic. VT, if persistent, can be life threatening. Automatic internal implanted defibrillators will fire (shock) for VF (and often VT also), thus preventing a cardiac arrest. Include here "torsades de pointes", and wide complex tachycardia, monomorphic VT and polymorphic VT. If no evidence of such arrhythmias, then record NO/N/R.

Item 15n. Hypertension? Record YES if the patient has a history of hypertension (controlled or uncontrolled). Uncontrolled hypertension includes chronic hypertension or a hypertensive crisis. Record NO if the patient does not have a history of hypertension. For the purposes of this item, look for explicit terms stating the presence or absence of hypertension. Do not consider notes regarding medications and blood pressure measurements.

Terms that are sufficient to record YES include: hypertension (HTN), borderline hypertension, renal hypertension, renovascular hypertension, history of hypertensive heart disease, hypertensive crisis, or history of labile hypertension. Pulmonary hypertension is not equivalent to systemic hypertension. Similarly, pulmonary heart disease and cor pulmonale are not equivalent to systemic hypertension. If newly diagnosed during this hospitalization, record NO/NR for this question.

Item 15o. Diabetes? Diabetes is any disorder related to inadequate control of blood sugars because of a problem with the body's response to or making of insulin. Uncontrolled or newly diagnosed diabetes is characterized by excessive urine excretion. When used alone, the term refers to diabetes mellitus. Record YES if the patient has a history of diabetes. A history of diabetes includes a history of previous hospitalizations for ketoacidosis, hyperosmolar coma, or out of control of glucose levels and those with juvenile onset diabetes, brittle diabetes, or diabetes treated with insulin or oral hypoglycemic drugs, type I diabetes, type II diabetes, and current treatment with an oral hypoglycemic or insulin. It does not include patients treated with diet alone, unless they show evidence of end-organ disease. Evidence of end-organ disease includes diabetic retinopathy, diabetic nephropathy, and peripheral neuropathy. Record NO/NR if the patient does not have a history of diabetes. A history of gestational diabetes, type II diabetes successfully treated with diet alone, elevated glucose during the hospital stay that is associated with steroid treatment or a possible history of impaired glucose tolerance is NOT sufficient for a history of diabetes. If newly diagnosed during this hospitalization, record NO/NR for this question.

Synonyms: insulin dependent diabetes (IDDM), insulin dependent diabetes mellitus (IDDM), diabetes mellitus (DM), non-insulin dependent diabetes (NIDDM), non-insulin dependent diabetes mellitus (NIDDM)

Item 15p. Chronic Obstructive Pulmonary Disease (COPD). Given that Chronic is part of the name of COPD, if there is an indication of COPD during the hospitalization or as a part of the past medical history then that would be sufficient to answer YES. Words that may be indicators of COPD-related hospitalization include but are not limited to include: COPD exacerbation, emphysema exacerbation, exacerbation of chronic bronchitis, or worsening of underlying COPD, emphysema or chronic bronchitis. Record YES if any of the following is mentioned as part of the patient's medical history: chronic obstructive pulmonary disease (COPD), emphysema or chronic bronchitis otherwise record NO/NR. Asthma exacerbation or history of asthma is not sufficient to answer YES.

Item 15q. Cor pulmonale refers to failure of the right side of the heart caused by long term pulmonary hypertension (high pressure in the pulmonary arteries). Right-sided heart failure then can also lead to left-sided heart failure. Record YES if the medical record shows evidence of the patient having a history of cor pulmonale otherwise record No/NR. If Cor pulmonale is newly diagnosed then answer NO/NR here.

Item 15r. Pulmonary Hypertension refers to high blood pressure in the pulmonary arteries (arteries that supply the lungs). PH leads to right-sided heart failure (i.e. cor pulmonale). Pulmonary hypertension may be primary (idiopathic or of unknown cause) or secondary as secondary to another pre-existing disease. Record YES if there is prior history of either primary or secondary pulmonary hypertension. Abbreviations may include: Pulm HTN, PHT, PAH (for pulmonary artery hypertension), or PH. If the only mention of pulmonary hypertension is in an echocardiogram (echo) report, record NO/NR. Pulmonary hypertension may be mentioned in a cardiac catheterization report in which case answer YES.

15s. End Stage Renal Disease (ESRD). End stage renal disease refers to patients requiring dialysis, either hemodialysis or peritoneal dialysis. If the patient has received a kidney transplant that is functioning normally then answer NO.

D. SURGICAL HISTORY

Item 16a-h.- Past cardiac procedures

Item 16a.- CABG (coronary artery bypass graft surgery) is heart surgery in which a blood vessel or a section of blood vessel (a bypass graft) is grafted onto one of the coronary arteries to bypass a narrowing of, or blockage in a coronary artery. Record YES if the medical record shows evidence of the patient having had a CABG in the past.

Synonyms: coronary bypass, coronary artery bypass graft. Bypass grafts usually include saphenous veins (SVG), internal mammary arteries (left = LIMA, right = RIMA), radial arteries, etc.

Item 16b. Percutaneous coronary intervention (PCI)? This stands for percutaneous coronary intervention (PCI), a broad term for any procedure that intends to treat an intracoronary lesion (plaque, thrombus, blockage) with catheters. It always involves coronary catheterization which also includes balloon angioplasty with or without intracoronary stent placement, or laser, or a cutting balloon (atherectomy). This interventional procedure is often performed during an acute myocardial infarction or performed electively to treat coronary blockages. PCI may also include intracoronary thrombolysis which involves injecting clot-busting medicine directly into the coronary artery, but not systemic thrombolysis. Record YES if there is evidence in the medical record of the patient having had PCI in the past otherwise record NO/NR. An unsuccessful PTCA or stent procedure in the past should be recorded as YES

Synonyms: Percutaneous transluminal coronary angioplasty (PTCA), coronary angioplasty, coronary atherectomy, coronary angioplasty, coronary stent, percutaneous coronary angioplasty (PCA), directional coronary atherectomy (DCA).

Item 16c. Valve Surgery? Valve surgery includes any surgical procedure to replace or repair a valve in the heart (aortic valve, mitral valve, tricuspid valve, pulmonic/pulmonary valve). Valve replacement may be described in terms of the type of prosthetic valve without specific reference to valve surgery; e.g., mechanical valves such as St. Judes, Bjork-Shiley, ball-in-cage, tilting disc, etc; bioprosthetic valves such as porcine valve, pig valve, cadaveric valve, tissue valve, Ross procedure, etc. Valve repair may be described using terms such as annuloplasty ring without specific reference to valve surgery. Record YES if the patient has a history of any type of valve repair or replacement.

Item 16d. Pacemaker? A pacemaker is an artificial device designed to monitor and/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 anti-tachycardia pacing function. Record YES to item 16d includes placing of pacing wires or a temporary or permanent pacemaker. If there is no mention of pacemaker in physician's notes, but physician describes ECG as "paced rhythm" and there is mention in other reports such as CXR of the presence of a pacemaker then record YES. If there is no other mention, other than in radiology report, record NO/NR, because it could be another device such as AICD. If only mention of the pacemaker is RN note, and no evidence of such by MD note, ECG, etc., then record No/NR.

Synonyms include single-chamber pacemaker, dual-chamber pacemaker, biventricular pacemaker, cardiac resynchronization therapy, pacemaker wire, DDD pacemaker, VVI pacemaker. Record No/NR if there is only mention of temporary use of Zoll patches (cutaneous pacing patches).

Of note, even though an AICD always includes a back-up pacemaker, AICD is NOT synonymous with pacemaker. Therefore, record NO/NR if there is only mention of AICD but no mention of pacemaker. Also, certain electrophysiology (EP) procedures such as an EP study involve the use of temporary pacemakers during the procedure for diagnostic purposes; record NO/NR if such temporary pacemaker wires are used during a procedure for diagnostic purposes but not as intentional therapy.

Item 16e. Automatic Internal Cardiac Defibrillator (AICD)? An Automatic Internal Cardiac Defibrillator (AICD) may be referred to as 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"). Record YES if evidence in the medical record shows the patient received this type of device during hospitalization. Record No if patient has had only a past electrical cardioversion or defibrillation but no AICD was implanted.

Item 16f. Ablation for arrhythmia? Cardiac (electrophysiologic) ablation therapy refers to treatment using electrophysiology (EP) interventions such as radiofrequency ablation (RFA) for arrhythmias. Record YES if the patient underwent an ablation therapy during this hospitalization, which is usually performed in the electrophysiology (EP) laboratory and has an accompanying report to document this procedure. Record "NO/NR" if there is no mention of this type of treatment. Do not record here a diagnostic electrophysiologic study (EPS), unless ablation therapy was performed.

Item 16g. Cardiac Transplant? Answer YES if this patient was previously listed on a heart transplant list or received a heart transplant. In terms of being listed for heart transplant, we are referring to those with severe or end-stage heart failure being formally listed on a waiting list for heart transplantation. Record YES if the patient is described as being listed for transplant or received a heart transplant during this hospitalization. Record "NO/NR" if there is no mention of this type of official listing for transplant or official transplantation surgery. Also record YES if the patient has been referred or is being evaluated for transplant but is not otherwise actively listed on a transplant waiting list. If the patient is considered as a "candidate for being listed for a transplant", record YES.

Item 16h. Ventricular Assist Device (VAD or LVAD)? Ventricular assist devices are devices that are implanted to mechanically support the heart for those with end stage heart failure. Often these devices are used while people are waiting for a transplant. These devices may be temporary or permanent. There are also percutaneous VADs that are placed through the skin into the major blood vessels; these are mostly placed in the operating room, but new/future versions may be placed in the cardiac catheterization laboratory. Most VADs support the function of the left ventricle, hence they are called left ventricular assist device (LVAD). Some VADs support both the left and right ventricles, hence they are called biventricular assist device (BiVAD). Record YES if the patient has a history of implantation of a VAD; include both LVAD and BiVAD support and both temporary and permanent devices. Record "NO/NR" if there is no mention of this type of device or surgery in past medical interventions. Do not include intraaortic balloon pump.

E. HOSPITAL COURSE

This section is to identify current or active problems anytime during this visit to the hospital. If there is a prior history, but it is not an active during this hospitalization then record NO/NR. If there is a prior history and you are not sure if currently active then record NO/NR.

Item 17a. Myocardial Infarction? Myocardial infarction occurs when an area of the heart is deprived of necessary oxygen-supplying blood, and the lack of oxygen causes injury or death to that part of the heart. *Synonyms or terms that describe myocardial infarction (MI) include: acute myocardial infarction (AMI), heart attack, cardiac infarction, coronary artery embolism, coronary artery occlusion, or coronary artery rupture, sub-endocardial infarction, infarction of any wall segment of the heart or microinfarct of the heart. Record YES if there is evidence of acute myocardial infarction.* Do NOT include "cannot rule out myocardial infarction, age undetermined". However, record No/NR if MI is only described as part of a differential diagnosis for a finding (e.g., "ST-T wave abnormality, consider ischemia, acute injury or myocardial infarction"), and not confirmed as an MI.

Item 17b. Shock or cardiogenic shock? Cardiogenic shock is the failure or the heart to maintain blood supply to the circulatory system and tissues because of inadequate output. Record YES if there is evidence in the medical record of the patient experiencing shock or cardiogenic shock, otherwise record NO/NR. If the term "septic shock" is used and not cardiogenic shock, answer "NO/NR."

Synonyms or terms that describe shock or cardiogenic shock include: severe pump failure, and *cardiac shock*

Item 17c. Ventricular Fibrillation, Cardiac Arrest or Asystole? Ventricular fibrillation (VF) is a chaotic rhythm, a condition in which disordered electrical activity causes the ventricles to contract in a rapid, unsynchronized, and uncoordinated way. When this occurs, little or no blood is pumped from the heart and the rhythm often leads quickly to death. Cardiac arrest is the cessation of heart pumping due to arrhythmia, most commonly ventricular fibrillation. Asystole is the sudden and complete cessation of cardiac function. If the participant has "sinus asystole," "sinus pause," this is not asystole. Asystole as part of a surgical protocol should be answered "NO/NR."

Record YES if there is evidence in the medical record of the patient having had Ventricular Fibrillation, Cardiac Arrest or Asystole during this hospitalization, otherwise record NO/NR. Cardiac arrest in the hospital will usually result in a "code blue" protocol. If you see that a "code blue" was called then likely there was a cardiac arrest although it may have been respiratory only, so look for confirmation.

Item 17d. Ventricular tachycardia? Ventricular tachycardia (VT) is an abnormal rapid but orderly ventricular rhythm with aberrant ventricular excitation, usually above 150 beats per minute, generated within the ventricle, and most often associated with atrioventricular (AV) dissociation. In VT the QRS duration is prolonged (>120 msec). Other ventricular rhythm abnormalities that should be considered as YES to item include "wide complex tachycardia" (but not "supraventricular tachycardia (SVT) with aberrancy"), Torsades de pointes, monomorphic VT or polymorphic VT.

Record YES if there is evidence of ventricular tachycardia (VT), whether nonsustained or sustained, according to the ECG finding. VT here does not include ventricular fibrillation. A premature ventricular contraction (PVC) is not sufficient to record yes. If VT was not seen on a 12 lead ECG but is documented on a telemetry recording and confirmed by a physician the record YES. There is no minimum number of consecutive ventricular

beats to qualify for VT. However, the VT must be spontaneous and not induced by a diagnostic test like an electrophysiology (EP) study or testing after defibrillator (ICD) implantation. Record NO/NR if there is no evidence of VT on telemetry monitoring or if telemetry monitoring was never performed during this hospitalization. However, record YES if there is no paper tracing but a doctor's note clearly documents VT was present.

Item 17e. Atrial fibrillation/atrial flutter? Atrial fibrillation (AF or A. Fib) is a condition where there is disorganized electrical and mechanical activity of the atria. It may be chronic, acute, or occur in a paroxysmal fashion (up to 7 days). On the ECG, it is recognized as an irregular rhythm with absent P waves. Atrial flutter (A. Flutter) is a rapid, usually regular rhythm with atrial rates of 250-350 bpm. Look for a statement in the medical record. Often this diagnosis may be found on ECGs with confirmed interpretations. Answer YES here if the participant is chronically in AF and it is confirmed on an ECG or telemetry or if they were temporarily in AF. Answer NO/NR if it is not certain as to whether they were in AF or not. Answer YES if there is "atrial fibrillation with aberrancy". Do NOT include here "supraventricular tachycardia (SVT)", and "paroxysmal atrial tachycardia (PAT)".

Item 17f. COPD exacerbation? Record YES if any of the following is mentioned as an active problem during this admission: chronic obstructive pulmonary disease exacerbation (COPD exacerbation), exacerbation of chronic bronchitis, exacerbation of emphysema otherwise record NO/NR. Basically, any indication that shortness of breath or symptoms may be worse than their baseline and the cause might be COPD then record YES. An exacerbation of asthma without mention of COPD is not sufficient to record YES.

Item 17g. Cardiac Surgery—CABG or valvular surgery? Refer back to items 16a and 16c for definitions and synonyms for CABG and valvular surgery. Record YES if the medical record shows evidence of the patient had a CABG or valve surgery during this hospitalization. Otherwise record NO/NR.

Item 17h. Non-cardiac surgery? Record YES if the patient has non-cardiac surgery during this visit. Surgery does not include procedures, such as catheter placement or biopsy drainage, unless it was performed in an operating room under anesthesia. Examples of common non-cardiac surgeries include hip replacement, knee replacement, cholecystectomy, and appendectomy. Procedures performed in vascular and interventional radiology are not considered surgery.

Item 17i. Pulmonary embolus? Pulmonary embolus is the obstruction of the pulmonary artery or one of its branches by an embolus (a clot that formed in another blood vessel, usually the deep veins of the upper leg, and then traveled in the venous system to the lung). Record YES if PE seen on an arteriogram, or high resolution computed tomography (CT scan).Record YES if a ventilation-perfusion lung scan (VQ scan) is interpreted as 'high probability' for PE. Record YES if a physician diagnosis PE during this visit. Deep venous thrombosis (DVT) is not adequate for YES. *Synonyms:* Lung clot, pulmonary clot, lung embolus.

Item 17j. Pneumonia? Pneumonia is inflammation of the lung(s), usually caused by bacteria or virus. Chest x-ray will show consolidation or infiltrate—which is from the air spaces in the lung filling with exudate (material, such as fluid and cells that escapes from the blood vessels). There are many types of pneumonia (i.e., aspiration, walking pneumonia, lobar pneumonia). Record YES if pneumonia is reported during this visit. Record YES if it is recorded on a chest x-ray or Chest CT scan, however beyond the

radiologists note pneumonia seen on imaging must also be acknowledged by a treating physician. Use the hierarchy rules to determine whether pneumonia is present or not.

F. PHYSICAL EXAM

The purpose of this section is to record weight and signs that were taken at the time of first presentation of the event (which may be at arrival or first manifestation while at the hospital). In general, record the first physical exam sign most proximal to event onset, usually at hospital arrival. These should not be taken by EMS. If the first documented physical exam is after the date of admission or onset of event, record NR (enter ===). However, if time of arrival is late evening (near midnight) and the date changes for when the "first" physical exam is documented, record this even if the date has changed to a day later from the official admission date. If measurements are not available, record NR (enter ===) where appropriate. If the event began after admission (i.e., in-hospital onset or progression), do not record the values from the time of admission; take the first recorded value after the onset of the event.

Item 18 and 18a. Weight or BMI: Patient's weight or BMI at arrival to hospital or ED (or at onset of event) should be recorded if missing, record equal signs across the data field. Enter the patient's measured weight in pounds or kilograms or BMI (only if already calculated in the medical record). In the checkbox for 18a after the weight or BMI then record 1 if you recorded weight in lbs) or record 2 if you recorded wt. in kilograms or record 3 if you recorded BMI. In general, record a *measured* weight or *calculated BMI*, not a *reported* weight or BMI. Usually weights listed in the ambulance record are reported, so do not record these. The first available weight or BMI may be charted on the Emergency Department sheet, the clinical graph, the nursing flow sheet or may be found in testing reports (e.g., catheterization report, echocardiogram report) or in medication sheets from pharmacy. If not in any of those locations then weight or BMI noted on the admission history and physical or at the time of event from a progress note may be used. For in-hospital onset, record the first documented measurement after onset or progression of symptoms. Weight or BMI from the emergency room visit may either be measured or reported; use your best judgment to decide. If there are two weights recorded for the same day which are quite different, use your best judgment to decide which is the more accurate *measured* weight. If the event occurred after admission, record the first weight available after onset of the event. Do not calculate weights or BMIs; they must be *recorded* in the chart.

Item 19. Did patient have any of the following signs?

Item 19a. Jugular venous distension (JVD)? Jugular venous distension is a finding in which the jugular veins in the neck are engorged (appear distended) due to back up of fluid from the heart into the venous system in the neck. As the jugular vein becomes distended the vein appears higher on the neck. It can indicate heart failure and/or fluid overload. Record YES if jugular venous distension or JVD is noted on physical exam. Usually this is specified near the top of the physical exam under "neck". If the medical record does not specify jugular venous distension per se but does describe an estimated jugular venous pressure (JVP), then use a cutoff of 6 cm H_2O: if JVP > 6 cm H_2O (includes JVP>6 above clavicle) record YES; if JVP < or equal to 6, record 'NO/NR'. IF "no JVD" or "- JVD" specified on exam then record NO. If there is no evidence of whether the patient was examined for JVD on examination then record NR.

Synonyms: JVD, engorged neck veins, jugular vein distension

Item 19b. Crackles or rales? Pulmonary rales (also known as crackles) is an abnormal lung sound heard with a stethoscope during physical exam. This sound may be from fluid in the lungs due to heart failure, or from other etiologies. Fluid accumulates first in the bases of the lungs (basilar aspect). Record YES if 'rales' or 'crackles' noted from the patient's physical exam. Record YES if any of the following are recorded: fine crackles, coarse crackles, basilar crackles, or basilar rales. If examination around time of event states normal lung sounds then answer NO. Normal lungs sounds are often noted on the physical examination under the lung examination as "CTA B" for clear to auscultation bilaterally or if it is stated that the lung examination was normal then answer NO. Coarse breath sounds is not adequate to record YES here. Otherwise if normal or abnormal lung sounds not explicitly stated then answer NR.

Synonyms: rales, (or crackles or crepitations), right base > left base or vice versa, scattered rales, occasional rales, basilar crackles, few crackles or crepitations, diffuse persisting rales, fine rales, greater on one side than the other, hilarrales, inspiratory rales (unless restricted to the bases), RUL (right upper lobe) or LUL (left upper lobe) rales, rales in upper lobes, wet and moist lungs, bilateral rales, rales in all lung fields, rales up to the axilla.

Item 19c. Wheezing? Wheezing is an abnormal lung sound usually heard on exhalation, sometimes audible without a stethoscope. This sound is most often associated with asthma and emphysema, but also may be from fluid in the lungs due to heart failure. Record YES if 'wheezing' (+ wheeze) noted from physical exam regardless of whether it responded/improved/resolved with bronchodilator treatment. Otherwise answer NO if normal lungs sounds noted or if rales/rhonchi noted, but not wheeze. If a lung exam is not explicitly stated then answer NR.

Item 19e Rhonchi? Rhonchi are coarse abnormal lung sounds heard with a stethoscope during physical exam. This sound is usually from secretions in the airway, as with pneumonia. Record YES if rhonchi noted on the physical exam of the lungs. If crackles, rales, or coarse breath sounds reported, but not rhonchi then record NO here. If examination around time of event states normal lung sounds then answer NO. Otherwise if normal or abnormal lung sounds not explicitly stated then answer NR.

Synonym: rhonchus (the singular form).

Item 19f. S3 gallop? The first two heart sounds (S1 and S2) are normal sounds heard with a stethoscope; however, there are two additional sounds that are called gallops, S3 and S4. S3 occurs during early rapid filling of the left ventricle caused by an elevation of the left atrial pressure; therefore, it is a heart sound that can come and go depending on fluid balance. The presence of an S3 may indicate heart failure. Record YES if an S3 is noted from the physical exam anytime during hospitalization, otherwise record 'NO' if it is stated that there were no gallops or no S3. This is usually stated in the examination of the heart as "No m/r/g" for "No murmur/rubs/gallops" when the heart exam is normal. If no gallop or no S3 is not stated then answer NR.

Synonyms: S3, gallop (gallop alone refers to an S3 – not an S4), distant S3, third heart sound, ventricular gallop, rate-related gallop, summation gallop (means they have both an S3 and S4)

Item 19c. Lower extremity edema-unilateral? Record YES if lower extremity edema is noted in one leg from the physical exam. This would be record under "EXT" for extremities and is often noted as 1+-4+ edema with or without pitting. Here only record YES if it is noted in one leg only. If bilateral edema is noted then record NO. If one leg has only mild edema or 1+ and the other leg has more then record YES. Record NO if there is no mention of a physical exam for edema. Note this exam is often abbreviated when normal as "Ext: no c/c/e" for no cyanosis, clubbing or edema. Record NO if you see "no c/c/e". If edema is noted in the physical in one leg, and there is no statement about the other leg then infer that there was no edema in the other leg and answer YES. If there is no statement on the physical exam regarding edema of the lower extremities then answer NR. Unilateral edema may be stated on the physical exam in any of the following ways: "ext: RLE 2+, or LLE 2+, or R 2+ or L 2+, or any combination with 3+ or edema.

Item 19d. Items 19g: Lower extremity edema-bilateral? Record 'NO' if the edema is only described as "trace" or if it is stated that there is no edema or "no c/c/e" for no cyanosis, clubbing or edema. If there is no statement on the physical exam regarding edema of the lower extremities then answer NR. If edema is noted in the physical in one leg, and there is no statement about the other leg then infer that there was no edema in the other leg and answer NO.

Synonyms: LE edema, peripheral edema, swollen ankles, 1+, 2+, 3+, 4+ pitting (edema), nonpitting edema, anasarca, generalized edema.

G. DIAGNOSTIC TESTS

The purpose of this section is to acquire the essential information from pertinent diagnostic tests. For all these tests, you only need to look at the official report (signed report). If there are no official reports, then look elsewhere in the patient's chart for a summary of the report, namely the doctor's note. Record the results of the following tests that were performed during the course of this hospitalization. For *transthoracic echocardiograms(TTE) and transesophageal echocardiograms(TEE)*, when "suggest" is seen in the reports record as YES (in contrast to the general hierarchy rules).

Item 20. Chest X-ray performed? Record YES if a chest x-ray was performed during this visit AND the result (any result including just a handwritten summary) was included. Answer NO if a chest x-ray was performed but no result was included. If YES, then answer questions 21a-d regarding the results.

Item 21. Did the patient have any of the following signs on chest x-ray (at the time during this event)? Record YES to any of the listed items present on any chest x-ray reports (or on dictated summary reports that refer to a chest X-ray if not contradicted by the official CXR report). An official CXR report is one signed (electronically or in ink) by an MD. The official CXR report takes precedence over any non-radiology MD notes. Include all chest X-rays available, performed anytime during the course of the hospitalization or ED visit, whether before or after the event. This includes chest x-rays that may have preceded the onset of the event if the event occurred during the hospitalization (but after the admission date). However, if the hospitalization for the decompensation or progression of the event was longer than 7 days, limit the review of the total number of chest X-rays to those obtained during the first 7 chest X-rays subsequent to the date of the decompensation or progression of the event. Preceding adjectives such as "suggestive", "suggesting", and "concerning for" are synonyms for YES.

Item 21a. Pulmonary edema or CHF? Record YES if any chest x-ray result shows pulmonary edema, congestive heart failure, alveolar edema, or alveolar pulmonary edema. Include both unilateral and bilateral alveolar or interstitial pulmonary edema. Record YES if "probable" or "definite" but record NO/NR if "possible" edema or "cannot exclude edema".

Record YES if the following is described in the interpretation or in the conclusions of the chest x-ray report: "congestive heart failure", "mild congestive failure", "consistent with CHF", "congestive failure", or "suggestive of" or "suggesting CHF" (in contrast to the general rule that 'suggestive of' = No). Record NO/NR if "congestive heart failure" is only listed in the indication or diagnosis section of the report. Record YES if "probable" or "definite", but record No/NR if "possible". Mention of CHF in the chest x-ray report without further documentation is insufficient to record YES, as it is often listed as an indication for the chest x-ray rather than a finding from the interpretation of the x-ray.

Item 21b. Cardiomegaly or Cardiothoracic ratio $\geq$ 0.5? Record YES if the cardiothoracic ratio is 0.5 or greater. Record NO/NR if the CT ratio is < 0.5 or never mentioned, or if a ratio of 0.5 or greater is attributed to shallow inspiration (e.g., the patient's not having taken a full breath). Record YES if cardiomegaly is noted on any chest x-ray report.

Item 21c. Pulmonary vascular congestion or interstitial edema? Synonyms include "pulmonary congestion", "patchy bilateral pulmonary infiltrates suggesting pulmonary vascular congestion", "marked congestion of the pulmonary vasculature", "increase in pulmonary vasculature", "pulmonary vascular prominence". Synonyms also include "perihilar congestion", "perihilar edema", "perihilar or peribronchial cuffing", "perihilar vascular changes", "central congestion", and "congestion" not otherwise specified. Do not include "perivascular congestion". Record NO/NR if nothing is listed to describe this finding. Record NO/NR if the report describes that the pulmonary vascular congestion or prominence is clearly attributed to poor inspiratory effort. Record YES if the medical record shows evidence of "interstitial edema", "interstitial infiltrates, interstitial lung markings, interstitial prominence, interstitial opacities, perivascular edema, interstitial densities, or interstitial edema, otherwise record NO/NR.

Item 21d. Bilateral or unilateral pleural effusion? A pleural effusion is fluid buildup between the layers of tissue that line the lungs and chest cavity. Synonyms include "bilateral effusion", "blunting of both (or bilateral) costophrenic angles", "basilar pleural fluid", and "left-sided and right-sided effusions". Include effusions of any size (small, moderate, large). Do NOT include "pericardial effusion". Record YES if "probable" or "definite", but record No/NR if "possible".

Unilateral pleural effusion - Synonyms include "left(-sided) pleural effusion", "right(-sided) pleural effusion", and "blunting of the costophrenic angle (on one side only)". Include unilateral effusions of any size (small, moderate, large).

Item 22. Chest/Lung CT scan or CTA performed? Record YES if a Chest or Lung CT scan or CT angiogram (CTA) was performed anytime during this hospitalization AND the report or a summary of the report in a physician's note was included. IF YES, then answer Items 23a-e. Record NO/NR if not performed or there is no summary of the report and then skip to Item 24.

Item 23a-e. Did the patient have any of the following signs on CT at anytime during this hospitalization?

Item 23a. Pulmonary edema or pulmonary vascular congestion? Record YES if any CT result shows pulmonary edema, congestive heart failure, alveolar edema, or alveolar

pulmonary edema. Include both unilateral and bilateral alveolar or interstitial pulmonary edema. Record YES if “probable” or “definite” but record NO/NR if “possible” edema or “cannot exclude edema”.

Record YES if the following is described in the interpretation or in the conclusions of the CT report: “congestive heart failure”, “mild congestive failure”, “consistent with CHF”, “congestive failure”, or “suggestive of” or “suggesting CHF” (in contrast to the general rule that ‘suggestive of’ = No). Record YES if “probable” or “definite”, but record No/NR if “possible”. Record NO/NR if “congestive heart failure” is only listed in the indication or diagnosis section of the report. Mention of CHF in the chest x-ray report without further documentation is insufficient to record YES, as it is often listed as an indication for the chest x-ray rather than a finding from the interpretation of the x-ray.

Item 23b. Cardiomegaly? - *Synonyms* include “enlarged heart”, “hypertrophy (of the heart)”, “ventricular hypertrophy”, “LVH”, “borderline heart size”, “increased cardiac/thoracic (C/T) ratio”, “left ventricular enlargement (LVE)”, “upper limits of normal to mildly increased”, “marked cardiomegaly”, “the heart is enlarged”, “cardiopericardial silhouette is enlarged (or increased)”, “heart is consistently enlarged in its transverse diameter.” (Do NOT include “magnified heart”). Other terms include “upper limits of normal”, “generous heart size”, “accentuated (or prominent) cardiac silhouette”, “slightly prominent (heart)”. Record YES if “probable”, “definite” or "borderline" cardiomegaly, but record NO/NR if “possible” cardiomegaly or if no evidence of cardiomegaly in the chest x-ray report.

Item 23c. Bilateral or unilateral pleural effusion? Synonyms include “bilateral effusion”, “blunting of both (or bilateral) costophrenic angles”, “basilar pleural fluid”, and “left-sided and right-sided effusions”. Include effusions of any size (small, moderate, large). Do NOT include “pericardial effusion”. Record YES if “probable” or “definite”, but record No/NR if “possible”.

Unilateral pleural effusion - Synonyms include “left(-sided) pleural effusion”, “right(-sided) pleural effusion”, and “blunting of the costophrenic angle (on one side only)”. Include unilateral effusions of any size (small, moderate, large).

Item 23d. Enlarged superior or inferior vena cava? Record YES if evidence in the CT report refers to enlarged superior or inferior vena cava otherwise record NO/NR. This may be written as enlarged or engorged or dilated SVC or IVC.

Item 23e. Enlarged pulmonary arteries? Record YES if evidence from the CT report of enlarged pulmonary arteries otherwise record NO/NR. *Synonyms enlarged Pulmonary artery, engorged pulmonary artery, dilated pulmonary artery.*

Item 24. Transthoracic echocardiogram (TTE) performed? A transthoracic echocardiogram (ECHO or TTE) is an ultrasound test of the heart where images are obtained through the chest wall. The results of this study describe the structures of the heart and the function of the ventricles (systolic or contractile function, diastolic function or relaxation) and of the valves. Record YES if a TTE was performed during this hospitalization, otherwise record “NO/NR”. If results are provided but is not clear whether it was a TTE or TEE then presume it was a TTE as these are far more commonly performed. If more than one TTE study is documented in the medical record, complete the following information based on the TTE study with the *worst* finding (defined as the ECHO with the lowest LVEF) performed after the onset or progression of the event. (You can use the same scheme as described under Item 14 to compare the quantitative estimates of LVEF and qualitative descriptions of LV systolic function to

determine which is worse LV function.) However, if there are two TTE studies performed on the same day with the same LVEF description, use *both* reports to complete this section; if there are discrepancies between the reports regarding abnormal findings, record the specific or more severe abnormal finding even if the other report of the same day does not note it. For example, if one report describes "regional wall motion abnormality" and the other report of same day does not, record YES for "regional wall motion abnormality". If there is only one TTE study which was performed during this hospitalization before the onset or progression of heart failure, record YES and its information below. An official echo report is one signed (electronically or in ink) by an MD. If there is no official echo report available, record the lowest EF and the worst findings based on whatever information you have; however, if there is a disagreement that looks significant (e.g., a difference of EF by 10% or more, no regurgitation versus severe), a cardiologist's interpretation in the notes is superior to any other interpretation by a non-cardiologist. Record NO/NR if there are no results from a TTE included the medical record, even if you know one was performed.

Item 24a. Date: Record the date of the TTE study for which you will be recording the LVEF from, ideally this is the first TTE performed after onset of the event. If more than one TTE study is documented in the medical record, record the date of the TTE study with the *worst* finding (defined as the echo study with the lowest LVEF) performed after the onset or progression of the event, and complete the following information based on that study. Enter "==" signs if you do not know the LVEF.

Item 24b. Left Ventricular Ejection Fraction: Record the LVEF in percent (%) in the space provided, often referred to as the ejection fraction or EF. If a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if "30-35%", record "30"). If "greater than (>)" or "less than (<)" description is used, record the next numeric value (e.g., if ">55%", record 56; if "<20%", record "19"). In general, record the numeric value described in the text portion of the report; e.g., if there is a discrepancy between a numeric value listed in the text portion and a numeric value in the quantitative portion of the report, record the value (or lack of value) in the text. If EF is not available, enter equal signs (===). However, if the physician's interpretation states "normal" and a normal range is indicated on the report, record the lowest value of the normal range (e.g., if the normal range is between 55-90%, record "55"). If ejection fraction is described as "low" with no quantitative estimate, enter equal signs (===) and make sure item 24c.2 (Impaired LV systolic function) is recorded as "severe". If only "normal" is stated (and no range is indicated); enter equal signs (===) and do not give a normal range. An official echo report takes priority as the official reading over any doctor's interpretation; but if there is no official echo report, use the cardiologist's interpretation (e.g., in physician notes) over a non-cardiology doctor's interpretation.

Item 24c. Left ventricular hypertrophy (LVH) - This refers to increased left ventricular wall thickness. It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. If LVH is described, record its severity (mild, moderate, severe). If a range is given, use the higher (i.e., worst) severity grade (e.g., if "mild-to-moderate", record "moderate"). Of note, the description of "moderately severe" should be recorded as "moderate", and "markedly" is synonymous with "severe". If LVH severity is not described but LVH is otherwise reported (e.g., "thickened LV wall"), record "MILD". If there is no mention of LVH and left ventricular wall thickness is reported as normal or upper normal or thin, record LVH as "NONE". Record "NR" if there is no mention of LVH and no mention of LV wall thickness in the text (regardless of wall thickness measurements, i.e., do not *interpret* the quantitative part of the report.

Item 24d. Impaired LV systolic function - This refers to decreased left ventricular contractile performance or systolic function. It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. Synonyms for LV systolic function include “LV function”, “LV contraction”, “LV contractile performance”, “LV contractile function”. Synonyms for impaired LV systolic function include “LV dysfunction”, “LV systolic dysfunction”, “decreased LV contraction (or contractile performance)”, “decreased LV ejection fraction (LVEF)“, “depressed LVEF”, and “impaired LVEF”. If the LV systolic function or contraction is decreased, record its severity (mild, moderate, severe). If a range is given, use the higher (i.e., worst) severity grade (e.g., if “mild-to-moderate”, record “moderate”). Of note, the description of “moderately severe” should be recorded as “moderate”, and “markedly” is synonymous with “severe”. If the severity of the impaired LV systolic function is not described, but LV systolic dysfunction is otherwise reported, record “PRESENT”. If LV systolic function is reported as “poor”; record “SEVERE”; if reported as “fair”, record “PRESENT”; if reported as “good”, record NONE. If there is no mention of impaired LV systolic function and LV contraction (or systolic function or contractile performance) is reported as normal or upper normal, record “NONE”. If there is no mention of impaired LV systolic function and no mention of LV contraction (or systolic function or contractile performance), record “NR”. Do not record here “wall motion abnormalities” or “dilated ventricle”). However, if the LV systolic dysfunction is described as “global hypokinesis” (of any severity), then record the severity or, if severity is not otherwise mentioned, record MILD? But, if the echo describes a hypokinetic or akinetic wall segment of the LV but otherwise describes that the overall function is normal, record ‘NONE’. If the LV function or contraction is described as “hyperdynamic”, treat this as normal and record NONE.

Item 24e. Impaired RV systolic function -This refers to decreased right ventricular contractile performance or systolic function. It is usually reported in the qualitative part of the report under Right Ventricle and/or in the conclusions. Synonyms for RV systolic function include “RV function”, “RV contraction”, “RV contractile performance”, “RV contractile function”. Synonyms for impaired RV systolic function include “RV dysfunction”, “RV systolic dysfunction”, “decreased RV contraction (or contractile performance)”, etc. If the RV systolic function or contraction is decreased, record its severity (mild, moderate, severe). If a range is given, use the higher (i.e., worst) severity grade (e.g., if “mild-to-moderate”, record “moderate”). Of note, the description of “moderately severe” should be recorded as “moderate”, and “markedly” is synonymous with “severe”. If RV systolic function is reported as “poor”; record ”SEVERE”; if reported as “fair”, record ”MODERATE?”; if reported as “good”, record NONE. If the severity of the impaired RV systolic function is not described, but RV systolic dysfunction is otherwise reported, record “ MILD?”. If there is no mention of impaired RV systolic function and RV contraction (or systolic function or contractile performance) is reported as normal or upper normal, record “NONE”. If there is no mention of impaired RV systolic function and no mention of RV contraction (or systolic function or contractile performance), record “NR”. Do not record here “wall motion abnormalities” or “dilated ventricle”.

Item 24f. Pulmonary hypertension - This refers to elevated pressures in the pulmonary vasculature, mainly the pulmonary arteries. It is usually reported in the qualitative part of the report under Tricuspid Valve and/or in the conclusions. Synonyms for pulmonary hypertension include “PHTN”, “elevated pulmonary arterial (systolic) pressures (PASP)”, “elevated right ventricular systolic pressures (RVSP)”. If pulmonary hypertension is described, record its severity (mild, moderate, severe). If a range is given, use the higher

(i.e., worst) severity grade (e.g., if “mild-to-moderate”, record “moderate”). Of note, the description of “moderately severe” should be recorded as “moderate.” If the severity is graded as “borderline” or “upper normal”, record “NONE”. If the severity of the pulmonary hypertension is not described, but pulmonary hypertension is otherwise reported, record “MILD?”. If there is no mention of pulmonary hypertension and there is mention of normal “(estimated) pulmonary arterial (systolic) pressures (PASP)/ right ventricular systolic pressures (RVSP)”, record “NONE”. If there is no mention of pulmonary hypertension anywhere on the report, record “NR”.

22g. Impaired LV diastolic function -This refers to the impairment of left ventricular compliance or of the left ventricle’s ability to relax during diastole. If there is abnormal cardiac filling due to high filling pressures or impaired ventricular relaxation, the report will indicate abnormal diastolic function or diastolic dysfunction. It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions Use the typewritten report if available. A qualitative description in the report is higher priority than conclusions. This may be reported as mild, moderate or severe, or with elevated or normal LV filling pressure. Record as “mild,” “moderate,” or “severe” if specifically stated in the report. Synonyms for diastolic dysfunction include “diastolic LV dysfunction”, “impaired LV relaxation”, “impaired LV compliance”, “impaired LV diastolic filling”, “reversed E-A ratio”, “late diastolic filling”, “stiff ventricle”, “abnormal mitral annulus tissue Doppler signal”, “pseudonormalization of transmitral Doppler flow”, “restrictive filling pattern”, “Grade 1 diastolic dysfunction”, “Grade 2 diastolic dysfunction”, and “Grade 3 diastolic dysfunction”. Record YES if diastolic dysfunction is described of any severity. Mark “NONE” if LV diastolic function/compliance/filling is described as normal in the reporter “no diastolic dysfunction is documented.” If it is unclear based on the report whether diastolic dysfunction is present it was not mentioned, you are unsure, or it is unknown, record NR. If the severity of diastolic dysfunction is not reported, but abnormal diastolic function or diastolic dysfunction is reported somewhere in the findings or conclusions, mark “Present” for 24.d.3. Do not mark “present” if the severity has already been recorded (mild, moderate, or severe).

Item 25. Was a transesophageal echocardiogram (TEE) performed? A transesophageal echocardiogram (TEE) is an invasive ultrasound test of the heart where images are obtained by inserting an ultrasound probe into the mouth down to the esophagus and stomach. This test is much less common than a transthoracic echocardiogram (TTE). Of note, TEEs are commonly performed in the operating room for patients undergoing cardiac surgery; as such, the only report may be in the operative report or in the anesthesiology intraoperative note. Like the TTE, the results of a TEE study describe the structures of the heart and the function of the ventricles and of the valves. Record YES if a TEE was performed during this hospitalization. If more than one TEE study is documented in the medical record, complete the following information based on the FIRST TEE study performed after the onset or progression of the event. Please note, there must be a TEE report in order to complete this section; don’t assume a quote of “TEE” was correct unless report is documented as this could have meant TTE.

Item 25a. Date of first TEE performed after onset of event – Record the date of the first TEE study performed after onset of the event. If more than one TEE study is documented in the medical record, record the date of the TEE study with the *worst* finding (defined as the echo study with the lowest LVEF) performed after the onset or progression of the event, and complete the following information based on that study.

Item 25b1. Record the LV Ejection fraction of first TEE performed after onset of event in % in the boxes provided.

Item 25b2. Record the RV Ejection fraction of first TEE performed after onset of event in % in the boxes provided.

Item 25c3.Regional wall motion abnormalities –This refers to abnormal regional wall motion of the left ventricle if there are segments of LV that do not contract normally (for example, after myocardial infarction). It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. Record YES if regional wall motion abnormality is described. Synonyms for regional wall motion abnormality include "regional WMA", "segmental WMA", "segmental LV contractile dysfunction". Frequently, specific segments are described with abnormal motion without mention of the overall description of regional wall motion abnormality; for example, specific regions of the LV include anterior, anteroseptal, septal, inferoseptal, inferior, inferoposterior, posterior, posterolateral, lateral, anterolateral, apical, basal, and mid-portions of the LV walls. Record YES if certain parts of the wall have "hypokinesis", "akinesis", "dyskinesis", or "abnormal wall motion", regardless of severity (mild, moderate, severe). Record "NO/NR" if regional wall motion abnormality is absent or it is unclear based on the report whether regional wall motion abnormality is present. Global wall motion abnormality does not include regional or segmental wall motion abnormality.

Item 25c.4. Dilated left ventricle –This refers to an enlarged chamber size of the left ventricle (LV enlargement, LVE). It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. Record YES if dilated LV is described of any severity. Record "NO/NR" if the left ventricular chamber size is described as small or normal, or it is unclear based on the report whether the left ventricle is dilated.

Item 25c.5. Dilated right ventricle - This refers to an enlarged chamber size of the right ventricle. It is usually reported in the qualitative part of the report under Right Ventricle and/or in the conclusions. Record YES if dilated RV is described of any severity. Record "NO/Unknown/NR" if the right ventricular chamber size is described as small or normal, or it is unclear based on the report whether the right ventricle is dilated.

Item 25c.6 Valvular heart disease - Record YES if the patient has a history of valvular heart disease or valve surgery. For the purposes of this item a history of aortic stenosis (AS) , aortic regurgitation, mitral stenosis (MS), mitral regurgitation (MR), mitral valve prolapse (MVP), tricuspid valve disease (including stenosis, regurgitation), or pulmonary valve disease are sufficient to record YES. If the patient does not have a history of valvular heart disease, record No. However, an explicit statement about a history of valvular heart disease (in general or a specific valve disease) in the medical record is required to record YES. Echocardiogram results alone reporting these findings are not sufficient. If no evidence in the medical record of a history of valvular heart disease, record N/R.

Item 26. Coronary angiography performed? A coronary angiogram is an invasive test of the heart where a catheter is inserted into an artery and advanced to the coronary arteries to assess for coronary blockages. The catheters can be used to measure pressures in, and the function of, the left ventricle (during a "left ventriculogram" or "left ventriculography"), the pressures in the aorta (during an "aortogram" or "aortography"), as well as to assess the function of mitral and aortic valves. Synonyms for coronary angiography include "left heart catheterization (cath)", "coronary catheterization", and "coronary arteriography". This test is usually performed in a cardiac catheterization laboratory (cath lab), and there will be a separate report that describes this procedure

and the results. Both actual coronary catheterization reports and descriptions of left heart catheterization reports are sources for this section; but if both are present, the actual report should be used. If a person had a percutaneous coronary intervention (PCI, PTCA, coronary stent) during the hospitalization, record YES. If more than one coronary angiography procedure is performed during this hospitalization (e.g., there is both a diagnostic procedure followed by an interventional procedure like percutaneous coronary intervention, PCI), record most of the items from the first, diagnostic one. Record "NO/NR" if there is no mention of this procedure, and skip to item 27. Note: do not include CT angiography. If coronary angiography (left heart catheterization) was *not* performed during *this* hospitalization but was performed during a *prior* hospitalization or as an *outpatient*, please record the most recent test results if provided.

Item 26a. Date of coronary angiography - Record the date the coronary angiogram or left heart catheterization (LHC) was first performed. IF unknown, enter ========

Item 26b. LV ejection fraction (%) – LV Ejection fraction - Record the estimated left ventricular (LV) ejection fraction. In general, an exact number will be provided. However, if a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if "30-35%", record "30"). Enter equal signs (===) if EF is not available.

Item 26c. 70% or greater obstruction of any coronary artery? The major coronary arteries are the right, left main, left anterior descending, posterior descending, and circumflex, but there are many "branches" and marginals." Obstruction could be from an atherosclerotic plaque or a clot. Synonyms for obstruction are "stenosis," "blockage," "narrowing," and "occlusion." If percent obstruction is given, record "yes" if it is ≥70%. Also answer "yes" if the obstruction is described as "severe," "significant," or "major." Answer "no" if the obstruction is "mild," "minor," or "small" or NR if evidence is not sufficient to determine the answer.

Item 27. Record YES, if the medical record shows evidence that a cardiac multiple-gated acquisition scan (MUGA) or RVG was performed. This are performed less frequently than ECHO. They are often used to measure heart function before starting potentially cardiotoxic medications, such as certain chemotherapy.

Item 27a. LV Ejection fraction (%)? Record the estimated left ventricular (LV) ejection fraction. In general, an exact number will be provided. However, if a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if "30-35%", record "30"). Enter equal signs (===) if EF is not available.

Item 27b. RV Ejection fraction (%)? Record the estimated right ventricular (RV) ejection fraction. In general, an exact number will be provided. However, if a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if "30-35%", record "30"). Enter equal signs (===) if EF is not available.

Item 28. 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". Record YES if a cardiac MRI was performed during this hospitalization. Record "NO/NR" if there is no mention of this study.

Item 28a. LV Ejection fraction(%) - Record the estimated left ventricular (LV) ejection fraction. In general, an exact number will be provided. However, if a range or multiple values are given, use the lowest (i.e., worst) value (e.g., if "30-35%", record "30"). Enter equal signs (===) if EF is not available.

Item 28b. RV ejection fraction (%)? Record the estimated right ventricular (RV) ejection fraction (refer to Instructions in Item 28a. above).

Item 27. Did ANY imaging/diagnostic tests have any of the following findings:

Item 27a. LV ejection fraction? Record the lowest estimated left ventricular (LV) ejection fraction (refer to Instructions in Item 28a. above). The LVEF may have been reported elsewhere, however record the lowest EF from all studies done during this hospitalization.

Item 27b. Stress test positive for ischema? Stress tests are done to find ischemia which is brought on by the stress of either exercise to increase heart rate or certain medications to increase heart rate. A positive test is often defined by 1 mm or more of ST depression on the ECG. Record "YES" if present or if test result is "positive," "ischemic ECG changes," "abnormal," "significant ST depression," etc. Record No/NR if "normal", "equivocal" or "not diagnostic (or undiagnostic): Record NR if there is not enough evidence to determine the results of the test. ***Note:*** A stress test for ischemia can be negative per ECG but be positive per imaging. Record "YES" if the imaging revealed "abnormality consistent with ischemia," etc., even if the ECG did not show ischemic changes.

Item 27c. Regional wall motion abnormalities –This refers to abnormal regional wall motion of the left ventricle if there are segments of LV that do not contract normally (for example, after myocardial infarction). It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. Record YES if regional wall motion abnormality is described. Synonyms for regional wall motion abnormality include "regional WMA", "segmental WMA", "segmental LV contractile dysfunction". Frequently, specific segments are described with abnormal motion without mention of the overall description of regional wall motion abnormality; for example, specific regions of the LV include anterior, anteroseptal, septal, inferoseptal, inferior, inferoposterior, posterior, posterolateral, lateral, anterolateral, apical, basal, and mid-portions of the LV walls. Record YES if certain parts of the wall have "hypokinesis", "akinesis", "dyskinesis", or "abnormal wall motion", regardless of severity (mild, moderate, severe). Record "NO/NR" if regional wall motion abnormality is absent or it is unclear based on the report whether regional wall motion abnormality is present. Global wall motion abnormality does not include regional or segmental wall motion abnormality.

Items 27d. Dilated Left Ventricle? Dilation of a ventricle, may be for one ventricle or Bilateral. Record YES if either both or the left ventricle is dilated. If any of the following are stated in general terms, then assume they involve the left ventricle. Answer "YES" if any of the following are recorded (or something equivalent): Dilated or congestive cardiomyopathy. Answer "No" if only "ventricular hypertrophy" is present or NR if evidence is not sufficient to answer.

Items 27e. Dilated Right Ventricle? Dilation of a ventricle, may be for one ventricle or Bilateral. Record YES if either both or the right ventricle is dilated. If any of the following are stated in general terms, then assume they involve the left ventricle and not the right, unless they state Global dilation then this includes the right ventricle. Answer "YES" if dilated or congestive cardiomyopathy are recorded. Answer "No" if only "ventricular hypertrophy" is present or NR if evidence is not sufficient to answer.

Item 29e. Impaired left ventricular function? This refers to decreased left ventricular contractile performance or systolic function. It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions. Synonyms for LV systolic

function include “LV function”, “LV contraction”, “LV contractile performance”, “LV contractile function”. Synonyms for impaired LV systolic function include “LV dysfunction”, “LV systolic dysfunction”, “decreased LV contraction (or contractile performance)”, “decreased LV ejection fraction (LVEF)“, “depressed LVEF”, and “impaired LVEF”. If the LV systolic function or contraction is decreased record YES. If the severity of the impaired LV systolic function is not described, but LV systolic dysfunction is otherwise reported, record “YES”. If LV systolic function is reported as “poor” or “fair” record “YES”; if reported as “good”, record No. If there is no mention of impaired LV systolic function and LV contraction (or systolic function or contractile performance) is reported as normal or upper normal, record “No”. If there is no mention of impaired LV systolic function and no mention of LV contraction (or systolic function or contractile performance), record “NR”. Do not record here “wall motion abnormalities” or “dilated ventricle” However, if the LV systolic dysfunction is described as “global hypokinesis” (of any severity) or, if severity is not otherwise mentioned, record “YES”. But, if the echo describes a hypokinetic or akinetic wall segment of the LV but otherwise describes that the overall function is normal, record ‘No’. If the LV function or contraction is described as “hyperdynamic”, treat this as normal and record No. If evidence is poor or results unclear to make the determination, record NR.

Item 29f. Left ventricular diastolic dysfunction refers to the impairment of left ventricular compliance or of the left ventricle’s ability to relax during diastole. It is usually reported in the qualitative part of the report under Left Ventricle and/or in the conclusions (use the typewritten report if available). Synonyms for diastolic dysfunction include “diastolic LV dysfunction”, “impaired LV relaxation”, “impaired LV compliance”, “impaired LV diastolic filling”, “reversed E-A ratio”, “late diastolic filling”, “stiff ventricle”, “abnormal mitral annulus tissue Doppler signal”, “pseudonormalization of transmitral Doppler flow”, “restrictive filling pattern”, “Grade 1 diastolic dysfunction”, “Grade 2 diastolic dysfunction”, and “Grade 3 diastolic dysfunction”. Record YES if diastolic dysfunction is described of any severity. Record “NO/NR” if LV diastolic function/compliance/filling is described as normal, or it is unclear based on the report whether diastolic dysfunction is present. A qualitative description in the report is higher priority than conclusions.

Item 29g. Ventricular Septal Defect (VSD) a defect in the ventricular septum, the wall dividing the left and right ventricles of the heart. Ventricular septal defect is one of the most common congenital (present from birth) heart defects. It may occur by itself or with other congenital diseases. In adults, ventricular septal defects are a rare but serious complication of heart attacks. These holes are related to heart attacks and do not result from a birth defect. Record YES if evidence of VSD in the medical record otherwise No/NR. If the patient had a VSD and it was repaired prior to this hospitalization then answer NO/NR.

Item 29h. Atrial Septal Defect (ASD)? ASD is a type of congenital heart defect in the atrial septum, the wall dividing the left and right upper filling chambers (or atria) of the heart. Record YES if evidence of ASD in the medical record otherwise NO/NR. If the patient had an ASD and it was repaired prior to this hospitalization then answer NO/NR.

Item 29i. Patent Ductus Arteriosus (PDA)? PDA is a congenital heart defect wherein the ductus arteriosus fails to close after birth. If left uncorrected over the years, the PDA may lead to congestive heart failure. Record YES if evidence of PDA in the medical record otherwise No/NR. If the patient had a PDA and it was repaired prior to this hospitalization then answer NO/NR.

Item 29j. Artificial heart valve? This refers to cardiac surgery performed in an operating room by cardiac surgeons where heart valves are either replaced with prosthetic valve (mechanical or bioprosthetic) or repaired. Record YES if the patient underwent valve replacement or repair surgery during this hospitalization. Record "No/NR" if there is no mention of this type of surgery. Valve surgery includes any surgical procedure to replace or repair a valve in the heart (aortic valve, mitral valve, tricuspid valve, pulmonic/pulmonary valve). Valve replacement may be described in terms of the type of prosthetic valve without specific reference to valve surgery; e.g., mechanical valves such as St. Judes, Bjork-Shiley, ball-in-cage, tilting disc, etc; bioprosthetic valves such as porcine valve, pig valve, cadaveric valve, tissue valve, Ross procedure, etc. Valve repair may be described using terms such as annuloplasty ring without specific reference to valve surgery.

Item 29k. Hypertrophic Obstructive Cardiomyopathy (HOCM) is an abnormality in which the heart muscle (myocardium) becomes abnormally thick and hypertrophied. This can make it harder for the heart to pump blood. HOCM may also affect the heart's electrical system and is known for being a cause of sudden cardiac death in young people. Record YES if evidence of HOCM in the medical record otherwise No/NR.

Item 29l. Valvular Heart Disease? Record YES if the medical record mentions valvular heart disease currently which has not been repaired during this hospitalization. This would include malfunctioning or failing prosthetic valves. Record YES if the patient has had any type of valve repair or replacement. For the purposes of this item aortic stenosis (AS) , aortic regurgitation, mitral stenosis (MS), mitral regurgitation (MR), mitral valve prolapse (MVP), tricuspid valve disease (including stenosis, regurgitation), or pulmonary valve disease are sufficient to record YES. If the patient does not have valvular heart disease, record NO/NR. Echocardiogram results alone reporting these findings are not sufficient without further diagnosis by a physician. Valvular heart disease would need to be an active problem during this hospitalization to answer YES.

H. LABORATORY TESTS

The purpose of this section is to record the results of blood laboratory values taken during the hospitalization. Separate data items refer to the worst value and the last value. For the purposes of this section, worst refers to the highest value with the exception of item 36 (hemoglobin), item 37 (hematocrit), and item 33 (sodium). For these three items, the worst is defined as the lowest value. The last value refers to the last measurement taken during the hospitalization. If only some of the hospitalization labs are available, use the last values available even if they are not close to the discharge date. If the worst value and the last value are the same, record in both places. If no measurements are included in the medical chart, record NR (e.g., enter === in all blanks in the DMS for that laboratory value). Some of these tests may be only written in doctor's notes using a stick diagram as detailed below:

Sodium | Chloride | BUN / Glucose
Potassium | Bicarbonate | Creatinine \

OR

White blood cells \ Hemoglobin / Platelets
/ Hematocrit \

Item 30. BNP (pg/mL)? Brain or B-type natriuretic peptide (BNP) is a cardiac hormone (also present in the brain) specifically secreted from the cardiac ventricles as a response to ventricular volume expansion, pressure overload, and resultant increased wall tension. Synonyms may include "B-peptide". Record the worst value and the last value of BNP (as pg/ml) reported in the medical record. Record NR (enter ===) if a value for BNP was not available or performed during the course of this hospitalization. Record the upper limit of normal from the hospital record in item 30c. When numbers are preceded by a greater-than (">"), add 1 to the number's last digit. When numbers are preceded by a less-than ("<") sign, subtract 1 from the number's last digit. For example: if >4000, enter "4001"; if <148, enter "147". The worst is the highest value for BNP.

Reference levels: 0–99 picograms per milliliter (normal)

Item 31. ProBNP (pg/mL)? N-terminal prohormone brain natriuretic peptide (pro-BNP or NT-proBNP) is a slightly different measure of BNP than in item 30. Usually hospitals measure either BNP or ProBNP. Record the worst value and the last value of proBNP (as pg/ml) reported in the medical record. Record NR (enter ===) if a value for proBNP was not available or performed during the course of this hospitalization. Record the upper limit of normal from the hospital record in item 31.c. The worst value is the highest.

Reference levels for ProBNP are age and gender specific, e.g.,:

Age	*Male*	*Female*
<45 yrs	0-93	0-178
45-54	0-138	0-192
55-64	0-177	0-226
65-74	0-229	0-353
75+	0-852	0-624

Item 32. Troponin: Troponin is a complex muscle protein, which when combined with calcium ions influences the contraction of heart muscle. It is normally not found in blood. Its detection in the circulation is a marker for myocardial cell damage. Record the value of troponin T or Troponin I (as ng/mL) reported in the medical record. There is also a High Sensitivity troponin (HS troponin), however this is not used commonly in clinical settings. If you see HS troponin then record the value here. Record NR (enter ===) if a value for troponin was not available or performed during the course of this hospitalization. Record the upper limit of normal from the hospital record in item 32.c. If the upper limit of normal is described as "less than" a value, record the '<' sign. When numbers are preceded by a greater-than (">"), add 1 to the number's last digit. Skip to item 33 if no troponin value is available.

Troponin T Reference level: <0.029 ng/mL

Troponin I: Reference levels: 0.01-0.5 ng/mL. May vary by assay used.

Item 32c. If a Troponin value is available, then document type of Troponin was this? Record 1 for Troponin, type not specified, 2 for Troponin I, 3 for Troponin T, 4 for High Sensitivity Troponin (HS) or 5 if unsure.

Item 33. Sodium? Record the value of sodium (Na) (mEq/l) reported in the medical record. Record NR (enter ===), if a value of sodium was not available or performed during the course of this hospitalization. See above stick diagram of how a MD might summarize chemistries. For sodium, the lowest value is the worst.

Item 34. Serum creatinine (Cr)? is a marker of kidney function. Record the value of creatinine (mg/dl) reported in the medical record. Record NR (enter ===), if a value of creatinine was not available or performed during the course of this hospitalization. The highest value for creatinine is the worst. The highest value is the worst.

Item 35. Blood Urea nitrogen (BUN) (mg/dL)? BUN is the urea concentration of serum or plasma conventionally specified in terms of nitrogen content and called blood urea nitrogen (BUN) or serum urea nitrogen (SUN). Record the first (at time of the event) and last values of urea nitrogen (mg/dl) reported in the medical record. Record NR (enter ===), if a value of urea nitrogen was not available or performed during the course of this hospitalization. The highest value is the worst.

Item 36. Hemoglobin (Hgb) is the oxygen-carrying pigment of erythrocytes formed by developing erythrocytes in the bone marrow. The lower value is the worse value. Record the worst value of hemoglobin (in grams per deciliter) reported in the medical record. Of note, hemoglobin values obtained from arterial blood gas (ABG) analysis can be included. Record NR (enter ===), if a value of hemoglobin was not available or performed during the course of this hospitalization.

Item 43. Hematocrit (%) is the volume percentage of erythrocytes in whole blood. Record the worst value, which is the lowest. Record NR (enter ===), if a value for hematocrit was not available or performed during the course of this hospitalization. Unlike for hemoglobin, do NOT include hematocrit values obtained from arterial blood gas (ABG) analysis.

I. TREATMENTS

The purpose of this section is to assess for various treatments which are performed during the course of this hospitalization. These treatments or interventions will be described in the discharge summary, physician and nursing progress notes, and procedure/operative reports. They may also have specific ICD-9 procedure codes such as:

00.50: Implantation cardiac resynchronization pacemaker without mention of defibrillation, total system (CRT-P)

00.51: Implantation cardiac resynchronization pacemaker, total system (CRT-D)
00.52: Implantation or replacement of transvenous lead into left ventricular coronary venous system
00.53: Implantation or replacement of cardiac resynchronization pacemaker pulse generator only (CRT-P)
00.54: Implantation or replacement of cardiac resynchronization defibrillator pulse generator only (CRT-D)
89.49: Automatic implantable cardioverter/defibrillator (AICD) check

Item 38. Record whether the following treatments or interventions listed in Item 38 were performed during the course of this hospitalization. In general, record “No/NR” If a specific intervention was not performed during this hospitalization; this includes interventions that were only performed during a prior hospitalization.

Item 38a. Cardioversion or Defibrillation? Cardioversion and/or defibrillation refers to treatment of either atrial or ventricular arrhythmias using electrical cardioversion (DC cardioversion or DC CDV) or medications (pharmacological cardioversion) to convert the rhythm back to normal sinus rhythm. This includes an emergency cardioversion (e.g., during a cardiac arrest) and AICD firings that occur during the hospitalization.

This may be performed either in the electrophysiology (EP) laboratory or in the patient's hospital room. Record YES if the patient underwent an electrical or pharmacological cardioversion therapy during this hospitalization. There may or may not be an accompanying report to document this procedure. However, do NOT include cardioversion used as part of routine procedure during cardiac surgery that uses cardiopulmonary bypass; one shock is considered a normal part of the CABG procedure (record No), but if a second shock is required, then record YES for cardioversion. Record "No/NR" if there is no mention of this type of treatment or if cardioversion was performed in response to induced arrhythmia. Record YES if a cardioversion was attempted but was not successful in converting the rhythm back to normal or baseline rhythm.

Defibrillation is also called DC countershock, electric countershock of the heart, external electrode stimulation or carotid sinus stimulation. It may also be recorded in joules. Answer "yes" to this question if the participant was defibrillated with an AED immediately prior to this hospitalization. Record "No/NR" if there is no mention of this type of treatment or documentation of defibrillation that occurred.

Item 38b. Balloon pump? Intraaortic balloon pump (IABP) refers to a balloon-based mechanical cardiac support device that is implanted by a cardiologist either in the cardiac catheterization lab or at the patient's bedside in the intensive care unit when emergent. They support the heart function as VADs do, but this is only temporary support. Record YES if the patient underwent insertion of IABP support. Record "No/NR"if there is no mention of this therapy.

Item 38c. Percutaneous Coronary Intervention (PCI)/stent? PCI/stent refers to an invasive cardiac procedure performed in a cardiac catheterization laboratory by cardiologists where catheters are used to open coronary blockages. Synonyms for percutaneous coronary intervention (PCI) include "percutaneous transluminal coronary angioplasty (PTCA)", "PCI/stent", "PTCA/stent", "percutaneous coronary atherectomy", "percutaneous coronary rotoblader", "balloon angioplasty", and "stenting". Record YES if the patient underwent some type of PCI during this hospitalization, whether successful or not. Record No/NR if there is no mention of this type of treatment. Record "No/NR" if percutaneous myocardial revascularization (PMR) and transmural myocardial revascularization (TMR) are the only interventions mentioned because this is not a coronary revascularization. Beware of reports that may be labeled as "PCI Report" but no PCI was actually performed or attempted.

Item 38d. CPAP or BiPap? Continuous positive airway pressure (CPAP) or Bilevel positive airway pressure (BiPap) refers to respiratory treatments used to treat acute respiratory conditions such as pulmonary edema (cardiac and non-cardiac) and COPD exacerbation. It is often used to try to prevent intubation/mechanical ventilation and can also be used to treat obstructive sleep apnea. Answer YES if patient was on CPAP or BIPAP during this visit otherwise record No/NR. Do not answer YES if CPAP only used for treatment of obstructive sleep apnea.

Item 38e. Mechanical ventilation? refers to intubation and placement on a ventilator. Answer YES if patient was intubated and/or on mechanical ventilation during this visit otherwise record No/NR. Do not include elective intubation for surgery unless they fail to wean off the vent after surgery then answer YES. If the patient was bagged briefly and not intubated then answer NO/NR.

Item 38f. Thoracentesis (therapeutic or diagnostic)? Also known as pleural fluid analysis, thoracentesis is a procedure during which a needle or tube is inserted through

the chest wall into the pleural space (the space between the membranes lining the chest wall and those surrounding the lungs) to remove accumulated pleural fluid. Thoracentesis is performed to diagnose a condition, provide therapeutic benefit, or both. Record YES if evidence in the medical record mentions thoracentesis, otherwise record No/NR. This may be done in the patient's room or in radiology.

Item 38g. Ventricular Assist Device (VAD)? Ventricular Assist Device (VAD or LVAD) See item 16h for definition. Some VADs support both the left and right ventricles, hence they are called biventricular assist device (BiVAD). Record YES if the patient underwent implantation of a VAD during this hospitalization; include both LVAD and BiVAD support and both temporary and permanent devices. Record "No/NR" if there is no mention of this type of device or surgery. Do not include intraaortic balloon pump (IABP, item38 b).

Item 38h. Heart Transplant? refers to a patient with severe or end-stage heart failure being transplanted a heart. Record YES if the patient is described as being listed for transplant or received a heart transplant during this hospitalization. Record "No/NR" if there is not mention of transplant during this hospitalization. If the patient is considered as a "candidate for being listed for a transplant" or has been listed for transplant, record NO.

J. MEDICATIONS

The purpose of this section is to determine what medications were prescribed to the patient. Here there are two columns, one is for medications at admission and the other for medications at discharge. Record YES if any of the following drugs were given to the patient; record NO/NR if there is no mention of the drug. If patient is known to be non-compliant with medication, still record the prescribed list of medications. If the patient was transferred from another hospital to the current hospitalization, record the medications that were being taken by the patient prior to any hospitalization whenever possible; if that medication list is not available, record the medications that were being administered on the day of transfer. If the patient is transferred out to another hospitalization, and no discharge summary is available, record the medications that were being taken (not just ordered) by patient on day of discharge, which may be found on the medication administration sheets. Both p.o. and i.v. medications can be recorded in this setting; for example, if the patient is being transferred on nitroglycerin IV drip, then record YES for nitrates at hospital discharge.

Sources for abstracting medications include medication administration records (MAR), physician notes, and orders. If possible, the medications should be confirmed as being given; if that is not possible, use your best judgment. Note that in MARs, nursing notation of a circle (with or without a "H" sign) around a time indicates that the medication was held during that time; a documented subsequent time indicates that the medication was given at that later time.

Some of the trade names contain medications that belong to two classes. For example, Accuretic is a combination of an ACE inhibitor and a diuretic. If so, record such medications in both classes. Such medications are marked with '+' followed by an abbreviation for the other class involved. (The following abbreviations are used: ACE = ACE inhibitor, BB=beta blocker, D=diuretic, CCB = calcium channel blocker).

Item 39. ACE inhibitors? ACE (angiotensin-converting enzyme) inhibitors are vasodilators that lower blood pressure and can improve the pumping action of the heart in those with heart failure. They are used for hypertension (especially those with

diabetes), heart failure, and for diabetics to prevent kidney damage. Angiotensin receptor blockers are similar to ACE inhibitors but are distinct here.

Generic	Trade
Benazepril	Accupril
Captopril	Accuretic (+ D)
Enalapril	Aceon
Enalaprilat	Altace
Fosinapril	Capoten
Lisinopril	Capozide (+ D)
Moexipril	Lexxel (+CCB)
Perindopril	Lotensin
Quinapril	Lotensin HCT (+ D)
Ramipril	Lotrel (+ CCB)
Trandolapril	Mavik
	Monopril
	Monopril HCT (+ D)
	Prinivil
	Prinzide (+ D)
	Tarka (+ CCB)
	Teczem (+ CCB)
	Uniretic (+ D)
	Univasc
	Vaseretic (+ D)
	Vasotec
	Zestoretic (+ D)
	Zestril

Item 40. Angiotensin II receptor Blockers(ARB)? ARBs act on the same pathway as ACE inhibitors, but at a different point. They are vasodilators that lower blood pressure and can improve the pumping action of the heart in those with heart failure. They are used for hypertension (especially those with diabetes), heart failure, and in diabetics to prevent kidney damage.

Generic	Trade
Candesartan	Atacand
Eprosartan	Atacand HCT (+ D)
Irbesartan	Avalide (+ D)
Losartan	Avapro
Olmesartan	Benicar
Telmisartan	Benicar HCT (+ D)
Valsartan	Cozaar
	Diovan
	Diovan HCT (+ D)
	Hyzaar (+ D)
	Micardis
	Micardis HCT (+ D)
	Teveten
	Teveten HCT (+ D)

Item 41. Beta-blockers (BB)? This category of drugs block beta-adrenergic receptors, thereby decreasing the stress on the heart. They are used to treat arrhythmias, hypertension, and heart failure. However, do not include beta-blocker eyedrops (e.g., record "No/NR" for Timolol eye drops). A listing of Beta Blockers follows:

Generic	Trade
Acebutolol	Betachron
Atenolol	Betapace (*AAR)
Betaxolol	Bisopro
Bisoprolol	Bisoprol
Carteolol	Blocadren
Carvedilol	Brevibloc (*AAR)
Esmolol (*AAR)	Cartrol
Labetalol	Coreg
Metoprolol	Corgard
Nadolol	Corzide (+ D)
Penbutolol	Inderal
Pindolol	Inderide (+ D)
Propranolol	Innopran XL
Sotalol (*AAR)	Kerlone
Timolol	Levatol
	Lopressor or Lopressor HCT (+ D)
	Normodyne
	Normozide
	Sectral
	Tenoretic (+ D)
	Tenormin
	Timolide (+ D)
	Toprol XL
	Trandate
	Visken
	Zebeta
	Ziac (+ D)

Item 42. Digitalis? Digitalis is used to slow the heart beat in certain arrhythmias and is used in heart failure to improve the pumping action of the heart.

Generic	Trade
Digitalis	Cedilanid
Digitoxin	Crystodigin
Digoxin	Digitek
	LanoxicapsL
	anoxin

Item 43. Diuretics promote the excretion of urine. They are used as an anti-hypertensive and in people who are fluid overloaded, or have a history of heart failure or liver failure.

Generic	Trade
Acetazolamide	Accuretic (+ACE)
Amiloride	Aldactazide (+ aldosterone blocker)

Bendroflumethiazide
Bumetanide
Chlorthalidone
Chlorothiazide
Dichlorphenamide
Ethacrynate
Ethacrynic acid
Furosemide
Hydrochlorothiazide
Hydroflumethiazide
Indapamide
Mannitol
Methyclothiazide
Metolazone
Polythiazide
Torsemide
Triamterene
Trichlormethiazide
Quinethazone

Aldoclor
Aldoril
Aquatensen
Atacand HCT (+ARB)
Avalide (+ARB)
Benicar HCT (+ARB)
Bumex
Capozide (+ ACE)
Corzide (+ BB)
Daranide
Demadex
Diamox
Diovan HCT (+ARB)
Diucardin
Diulo
Diuril
Dyazide
Dyrenium
Edecrin
Enduron
Esidrix
HCTZ
Hydro-chlor
Hydro-D
Hydrodiuril
Hydromax
Hygroton
Hyzaar (+ARB)
Inderide (+ BB)
Lasix
Lopressor HCT (+ BB)
Lotensin HCT (+ARB)
Lozol
Maxzide
Metahydrin
Micardis HCT (+ARB)
Microzide
Midamor
Minizide
Moduretic
Monopril HCT (+ACE)
Mykrox
Naturetin
Oretic
Osmitrol
Prinzide (+ACE)
Renese
Saluron
Spirozide (+ aldosterone blocker)
Tenoretic (+ BB)
Teveten HCT (+ARB)

	Thalitone
	Timolide (+ BB)
	Trichlorex
	Uniretic (+ACE)
	Vaseretic (+ACE)
	Zaroxolyn
	Zestoretic (+ACE)
	Ziac (+ BB)

Item 44. Aldosterone blockers are a specific type of diuretic that is recommended for people with heart failure or from fluid overload from liver failure.

Generic	Trade
Spironolactone	Aldactone
Eplerenone	Aldactazide (+ D)
	Inspra
	Spirozide (+ D)

Item 45. Lipid lowering agents are used to lower cholesterol. This is especially recommended in those with known cardiovascular disease There are five classes of lipid lowering agents.

Inhibitors of Cholesterol Synthesis (Statins)

Generic	Trade
Atorvastatin	Lipitor
Lovastatin	Mevacor
Pravastatin	Pravachol
Rosuvastatin	Crestor
Simvastatin	Zocor

Bile Acid Sequestrants- Inhibitors of Bile Acid Absorption

Generic	Trade
Cholystyramine	Questran
Colestipol	Colestid
Colesevelam	WelChol

Inhibitors of Cholesterol Absorption

Generic	Trade
Ezetimibe	Zetia

Fibrates

Generic	Trade
Gemfibrozil	Lopid
Fenofibrate	TriCor

Niaspan

Generic	Trade
Nicotinic Acid (or Vitamin B3)	Niaspan

Item 46. Nitroglycerin(Nitrates) - Nitrates are vasodilators used to treat angina, hypertension, and heart failure. A listing of nitrates follows:

Generic	Trade
Isosorbidedinitrate	Anginabid
Isosorbidemononitrate	Bidil (+ hydralazine)
Nitrates	Cardilate
Nitrites	Deponit NTG Film
Nitroglycerin	Dilatrate
NTG	Duotrate
Trinitroglycerine	Imdur
	I.S.D
	Ismo
	Isochron
	Isosorbdin
	Isosorbide
	Isosorb mono
	Iso-Bid
	Isordil
	Isotrate
	Mi-trates
	Minitran
	Monoket
	N.T.S.
	Nitrek
	Nitro
	NitroBid
	Nitrocap
	Nitrocine
	Nitrocot
	Nitrodisc
	NitroDur
	Nitrogard
	Nitroglyn
	Nitrol
	Nitrolin
	Nitrolingual
	Nitronal
	Nitrong
	Nitro-par
	Nitroquick
	Nitrorex
	Nitrospan
	Nitrostat
	Nitrotab
	Nitro-time
	Nitro-transderm
	Nitrotransdermal

	NTG-spray
	Pentylan
	Peritrate
	Sorbitrate
	Transderm
	Transdermal NTG
	Tridil

Item 47. Hydralazine is a vasodilator medication used to treat hypertension and heart failure.

Generic	Trade
Hydralazine	Alpresoline
	Bidil (+ nitrate)

Item 48.Were any of the following medications given during this hospitalization?

Item 48a. IV inotropes? IV inotropes are medications that generally increase the contractility of the heart to help it pump more strongly. These medications may also increase the heart rate and cause arrhythmias; some may cause vasodilation of blood vessels while others cause vasoconstriction of blood vessels. These are usually administered as a continuous infusion.

Generic	Trade
Dobutamine	Dobutrex
Dopamine	Intropin
Milrinone	Primacor

Do NOT include ephedrine, epinephrine (adrenalin), midodrine (ProAmatine, Amatine), norepinephrine (Levophed), or phenylephrine (Neo-Synephrine).

Item 48b. IV diuretics? IV diuretics are diuretic medications that are available in IV form. Diuretics decrease the amount of water in the body by increasing urination. They are used to decrease body fluid and swelling of the hands or feet (edema), and for high blood pressure. IV diuretics may be administered either as bolus injections or as a continuous infusion. Do not include oral medications here.

Generic	Trade
Bumetanide	Bumex
Furosemide	Lasix
Ethacrynic acid	Edecrin
Hydrochlorothiazide	Diuril
Torsemide	Demadex

Item 48c. Oral diuretics? Oral diuretics medications that are available in tablet or capsule form for ingestion via the gastrointesintal tract, so do not include IV meds here.

Generic	Trade

Bumetanide	Bumex
Furosemide	Lasix
Ethacrynic acid	Edecrin
Hydrochlorothiazide	Diuril
Torsemide	Demadex