**DCRI Derived Analysis Variables**

The following variables are derived in the SAS programs:

1. 2-programs\dcri\_derived1.sas and stored in the dataset 1-data\dcri\_derived1.
2. 2-programs\dcri\_derived2.sas and stored in the dataset 1-data\dcri\_derived2.
3. 2-programs\dcri\_derived3.sas and stored in the dataset 1-data\dcri\_derived3.

The dcri\_derived1, dcri\_derived2 and dcri\_derived3 datasets include all participants from exams 1, 2 and 3 respectively and can be merged with other JHS datasets using subjid. The datasets include variables that might be applicable to a wide range of JHS studies. We did not include categorical variables for age, smoking, SBP, etc. or other variables which vary according to study design. Many medical history questions at exams 2 and 3 are worded “Since your last exam…” so derived variables for those time points may include cumulative history from prior exam questions (see variables post-fixed with ‘v1’ or ‘v2’);

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Derivation** | **Description** | **Visits** |
| subjid | From JHS analysis1 dataset | Unique JHS participant ID used to merge with other JHS datasets. |  |
| *Medical History* |  |  |  |
| chronic\_lung | Visit 1:  Merged from the personal and family history dataset (pfha): chronic\_lung = (pfha9a='Y');  Visit 2: chronic\_lung = (hhxa15a=1 or chronic\_lungv1);  Visit 3: chronic\_lung = (PFHb9A=1 or chronic\_lungv1 or chronic\_lungv2); | Self-reported chronic lung disease: Has a doctor said you had chronic lung disease? | 1, 2, 3 |
| asthma\_any | Visit 1: Merged from the personal and family history dataset (pfha) and lung dataset (rpaa):  asthma\_any = (pfha10a='Y' or (rpaa13='Y' and rpaa14='Y'));  Visit 2: asthma\_any = (hhxa16a=1 or asthma\_anyv1);  Visit 3: asthma\_any = (PFHb10A=1 or asthma\_anyv1 or asthma\_anyv2); | Self-reported asthma: PFHA10a: Has doctor said you have asthma?  Self-reported asthma: RPAA13: Have you ever had asthma and RPAA14: Was it confirmed by a doctor? | 1, 2, 3 |
| cough\_phlegm\_wheeze | Visit 1: Merged from lung dataset (rpaa):  cough\_phlegm\_wheeze = (rpaa1='Y' or rpaa6='Y' or rpaa8='Y' or rpaa9='Y');  Visit 2: cough\_phlegm\_wheeze = cough\_phlegm\_wheezev1;  Visit 3: cough\_phlegm\_wheeze = cough\_phlegm\_wheezev1; | Self-reported chronic coughing, phlegm or wheezing  RPAA1: Do you usually have a cough?  RPAA6: Bring up phlegm, 3+ months?  RPAA8: Chest ever sound wheezy w/out cold?  RPAA9: Chest sound wheezy most days? | 1  Not collected at visits 2 or 3 so visit 1 variable is used. |
| lvh\_qual | Visit 1: Merged from echo dataset (echa):  lvh\_qual = (echa21 in (1,2,3)) | Qualitative echo left ventricular hypertrophy (LVH) assessment variable echa21 (0=None 1= Mild 2=Mod 3=Severe 9=Cannot Assess). | 1  No echo at visits 2 or 3. |
| orig\_lvh\_any | Visit 1:  if not missing(lvh) then lvh\_any=lvh;  else lvh\_any=lvh\_qual; | **Original Definition:** The JHS derived left ventricular hypertrophy variable (lvh) is 34% missing due to high missing of quantitative LV Mindex from echo. To lower missingness, we derived using their quantitative variable when available and otherwise, we used the qualitative LVH assessment variable (lvh\_qual). | 1  No echo at visits 2 or 3. |
| lvh\_any | Visit 1:  if not missing(lvm2d) and not missing(height) then do;  lvm2d\_index = lvm2d/((height/100)\*\*2.7);  lvh\_any=(lvm2d\_index>51); | Left ventricular hypertrophy based on quantitative 2-D or M-mode LV Mass if available, otherwise qualitative echo assessment | 1  No echo at visits 2 or 3. |
| lvm2d | Visit1:  Merged from the echocariogram dataset (echa):  rename=(echa58=lvm2d) | 2-D Left Ventricular Mass | 1  No echo at visits 2 or 3. |
| lvm2d\_index | Visit1:  lvm2d\_index = lvm2d/((height/100)\*\*2.7); | 2-D Left Ventricular Mass Indexed by height^2.7 | 1  No echo at visits 2 or 3. |
| coronaryByp | Visit 1: coronaryByp = (mhxa52a='Y');  Visit 2: coronaryByp = (mhxb52a=1 or coronaryBypv1);  Visit 3: coronaryByp = (mhxc45a=1 or coronaryBypv1 or coronaryBypv2); | Self-reported history of Coronary Bypass Surgery based on question MHXA52A: Have a coronary bypass? | 1, 2, 3 |
| coronaryAngio | Visit 1: coronaryAngio = (mhxa54a='Y');  Visit 2: coronaryAngio = (mhxb54a=1 or coronaryAngiov1);  Visit 3: coronaryAngio = (mhxc47a=1 or coronaryAngiov1 or coronaryAngiov2); | Self-reported history of coronary angiography based on question MHXA54A: Ever had angioplasty of coronary arteries? | 1, 2, 3 |
| anychd | Visit 1: anychd = (chdhx or coronaryByp or coronaryAngio);  Visit 2: anychd = (hhxa10a=1 or mhxb17=2 or mhxb31=1 or mhxb32=1 or chdhxv1 or coronaryByp or coronaryAngio or anychdv1);  Visit 3: anychd = (chdhx or coronaryByp or coronaryAngio or anychdv1 or anychdv2);  NOTE: chdhx from JHS analysis dataset for visits 1 and 2 but not available at visit 2. | Any coronary heart disease per JHS variable (self-report or MI on ECG) or coronary bypass or angiography | 1, 2, 3 |
| angina | Visit 1:  self\_angina = (mhxa16='Y' and mhxa17='A');  self\_chestpain = (mhxa8='Y' and (mhxa9='Y' or mhxa10='Y') and mhxa11='S' and mhxa12='R' and mhxa13='L');  angina = (self\_angina or self\_chestpain);  Visit 2:  self\_angina = (mhxb16=1 and mhxb17=1);  self\_chestpain = (mhxb8=1 and (mhxb9=1 or mhxb10=1) and mhxb11=1 and mhxb12=1 and mhxb13=1);  angina = (self\_angina or self\_chestpain or anginav1);  Visit 3:  self\_angina = (mhxc9=1 and mhxc10=1);  self\_chestpain = (mhxc1=1 and (mhxc2=1 or mhxc3=1) and mhxc4=1 and mhxc5=1 and mhxc6=1);  angina = (self\_angina or self\_chestpain or anginav1 or anginav2); | Positive response to EITHER SERIES of questions:  1) MHXA16:/17 Saw a doctor because of chest pain? What did the doctor say it was? (A=Angina) *OR*  2) Positive response to ALL of the questions:   1. MHXA8: Ever had any pain/discomfort in chest? 2. MHXA9: ‘Chest pain walking up hill?’ *or* MHXA10: ‘Chest pain walking at ordinary pace on level?’ 3. MHXA11: What do you do if you get chest pain while you are walking? Response=S (Stop or slow down) 4. MHXA12: If you stand still, what happens? Response=R (Relieved) 5. MHXA13: Time required for relief of chest pain. Response=L (10 min or less) | 1, 2, 3 |
| nocturnal\_dyspnea | Visit 1: nocturnal\_dyspnea = (MHXA48='Y');  Visit 2: nocturnal\_dyspnea = (mhxb48=1 or nocturnal\_dypneav1);  Visit 3: nocturnal\_dyspnea = (mhxc41=1 or nocturnal\_dypneav1 or nocturnal\_dypneav2); | Self-reported nocturnal dyspnea  MHXA48: Ever awakened by trouble breathing? | 1, 2, 3 |
| swollen\_leg | Visit 1: swollen\_leg = (mhxa49='Y' and mhxa50='Y');  Visit 2: swollen\_leg = ((mhxb49=1 and mhxb50=1) or swollen\_legv1);  Visit 3: swollen\_leg = ((mhxc42=1 and mhxc43=1) or swollen\_legv1 or swollen\_legv2); | Self-reported swollen legs at end of day  MHXA49: Ever have swelling of the feet or ankles?  MHXA50: Swelling come during day, go down overnight? | 1, 2, 3 |
| cardiac | cardiac = sum(anychd, angina, swollen\_leg, nocturnal\_dyspnea, afib); | Cardiac component score for Gothenburg algorithm. | 1, 2, 3 |
| pulmonary | pulmonary = sum(chronic\_lung, asthma\_any, cough\_phlegm\_wheeze); | Pulmonary component score for Gothenburg algorithm. | 1, 2, 3 |
| hftherapy | hftherapy = sum((digoxin=1), (diuretic=1)); | HF Therapy component score for Gothenburg algorithm. | 1, 2, 3 |
| gothenburg\_score | **See algorithm in table below.** | Modified Gothenburg HF score based on our adaptation of the ARIC Modified Gothenburg criteria to JHS exam questions. | 1, 2, 3 |
| hfhx | **See algorithm in table below.** | History of heart failure based on our adaptation of the ARIC Modified Gothenburg criteria to JHS exam questions. | 1, 2, 3 |
| hfhxdate | hfhxdate = visitdate; | Exam visit date for ascertainment of Heart Failure based on ARIC modified Gothenburg criteria | 1, 2, 3 |
| hfhxyr | hfhxyr = year(visitdate); | Exam visit year for ascertainment of Heart Failure based on ARIC modified Gothenburg criteria | 1, 2, 3 |
| framingham\_stroke\_score | Visit 1:  \*Calculate the sex specific Framingham risk score;  if sex="Male" then  framingham\_stroke\_score = agecat + msbpcat + 2\*(antihypertens=1) + 2\*(diabetes=1) + 3\*(currentsmoker=1) + 3\*(cvdhx=1) + 4\*(afib=1) + 6\*(lvh\_any);  else  framingham\_stroke\_score = agecat + fsbpcat + (antihypertens=1)\*fantihyper\_score + 3\*(diabetes=1) + 3\*(currentsmoker=1) + 2\*(cvdhx=1) + 6\*(afib=1) + 4\*(lvh\_any); | The Framingham stroke risk score from Wolf, et al1 is sex specific and calculated based on 10 age categories, 10 SBP categories, antihypertensive therapy (for females, points depend on SBP), diabetes, current smoking, cardiovascular disease, atrial fibrillation and left ventricular hypertrophy. The continuous risk score can range from 0-30 points. | Only derived at visit 1 to establish baseline stroke risk. |
| pacemaker | Visit 1: pacemaker = (ecga23=8);  Visit 3: pacemaker = (ecgb22=8); | Pacemaker implanted based on atrioventricular conduction defect Minnesota code 6-8, paced. | 1, 3  ECG not available at visit 2. |
| *SES* |  |  |  |
| education\_recode | select;  when(pdsa18a >= 19) education\_recode=9;  when(pdsa18a = 18) education\_recode=8;  when(pdsa18a = 17) education\_recode=7;  when(pdsa18a = 16) education\_recode=6;  when(pdsa18a = 15) education\_recode=5;  when(pdsa18a = 14) education\_recode=4;  when(pdsa18b = "Y") education\_recode=3;  when(12 <= pdsa18a <= 13) education\_recode=2;  when(0<= pdsa18a <= 11) education\_recode=1;  otherwise education\_recode=.;  end;  %chgmiss(education\_recode, 1); | We shared a new algorithm with JHS to derive education and they recoded in the 12/2013 release. However, there are still slight differences in frequency counts because they did not reverse the order of assignment so that highest level of education is recorded first. For example, there are a handful who received a GED (question pdsa18b) but later earned a college degree. We think that highest level achieved should be coded. Our version still works with JHS format edu. The very low remaining missing were coded to the most frequent category 1 (less than high school).  value edu  1 = "Less than high school"  2 = "High school graduate"  3 = "GED"  4 = "Some vocational or trade school, but no certificates"  5 = "Vocational or trade certificate "  6 = "Some college, but no degree "  7 = "Associate degree"  8 = "Bachelor’s degree"  9 = "Graduate or professional schools"; | 1, 3  Not collected at visit 2 so visit 1 variable is used. |
| *Alcohol usage* | Merged from alcohol history dataset (adra) |  |  |
| alc\_prioryr | Visit 1: alc\_prioryr = (adra1='Y');  Visit 3: alc\_prioryr = (adrb1=1); | Any alcohol based on question ADRA1: Ever consumed alcoholic beverages?  N= No  S= Stopped drinking more than one year ago  Y= Yes | 1, 3 |
| alcwk | Visit 1:  if not alc\_prioryr then do;  alcwk=0;  alcday=0;  end;  else do;  if adra2b='W' then alcwk = min(adra2a, 7)\*adra3;  else if adra2b='M' then alcwk = (min(adra2a, 30)\*adra3)/4;  else if adra2b='Y' then alcwk = (min(adra2a, 365)\*adra3)/52;  alcday = alcwk/7;  end;  Visit 3:  if not alc\_prioryr then do;  alcwk=0;  alcday=0;  end;  else do;  if adrb2b=1 then alcwk = min(adrb2a, 7)\*adrb3;  else if adrb2b=2 then alcwk = (min(adrb2a, 30)\*adrb3)/4;  else if adrb2b=3 then alcwk = (min(adrb2a, 365)\*adrb3)/52;    alcday = alcwk/7;  end;  \*Impute the low remaining missing (n=93) to the median of 0 drinks per week;  %chgmiss(alcwk, 0);    \*Impute the low remaining missing (n=93) to the median of 0 drinks per day;  %chgmiss(alcday, 0); | Average number of alcoholic drinks per week in the prior 12 months based on ADRA1 (any consumption), ADRA2a (days consumed), ADRA2b (time unit) and ADRA3 (number of drinks).  NOTE: When question ADRA1 was not answered yes, the other alcohol questions should have been skipped so we are imputing average daily and weekly drinks to zero. The main difference between the DCRI alcwk and JHS derived alcw is related to handling of missing data. | 1, 3 |
| alcday | See code for alcwk above. | Average number of alcoholic drinks per day in the prior 12 months based on ADRA1 (any consumption), ADRA2a (days consumed), ADRA2b (time unit) and ADRA3 (number of drinks).  NOTE: When question ADRA1 was not answered yes, the other alcohol questions should have been skipped so we are imputing average daily and weekly drinks to zero. The main difference between the DCRI alcwk and JHS derived alcw is related to handling of missing data. | 1, 3  Not available at visit 2. |
| *Physical activity* |  |  |  |
| activity | Visit 1: activity = (paca19='Y'); | PACA19: Did you participate in physical activities in the last year? | 1  Not available at visit 2 and questions inconsistent at visit 3. |
| activehrswk | Visit 1:  select;  when(missing(paca23)) activehrswk=0;  when(paca23='A') activehrswk=1;  when(paca23='B') activehrswk=2;  when(paca23='C') activehrswk=3;  when(paca23='D') activehrswk=4;  when(paca23='E') activehrswk=5;  end; | Average number of activity hours/week:  0: None (confirmed that missing aligns with no physical activity listed on question paca19)  1: <1 hour/week  2: 1- <2 hours/week  3: 2- <3 hours/week  4: 3- <4 hours/week  5: 4+ hours/week | 1  Not available at visit 2 and questions inconsistent at visit 3. |
| *Medications* | Our medication derivation differs from variables derived by JHS.   * If there was evidence of medication in the files, set to yes (1) * If there was no evidence of medication in the file:  1. If the JHS medAcct variable indicates participant brought all meds or does not take any meds, we will set to no (0). 2. Otherwise (incomplete or no meds brought to exam), we will set to missing category (2). |  | 1, 2, 3 |
| antidepress | substr(tccode,1,6) in ('580000', '580300', '581000', '581200', '581600','582000', '583000') | Antidepressant medication:  Antidepressants (TC class 580000) or  Alpha-2 Receptor Antagonists (Tetracyclics, TC class 580300) or  MAO Inhibitors (TC class 581000) or  Modified Cyclics (TC class 581200) or  Selective Serotonin Reuptake h1hibitors (SSRIs, TC class 581600) or  Tricyclic Agents (TC class 582000) or  Miscellaneous Antidepressants (TC class 583000) | 1, 2, 3 |
| antihypertens | substr(tccode,1,2) ='36’ | Antihypertensive medication (TC class 36xxxx) | 1, 2, 3 |
| antihypertenscomb | substr(tccode,1,4) ='3699' | Antihypertensive combination medication (TC class 3699xx) | 1, 2, 3 |
| adrenolytic | substr(tccode,1,4) ='3620' | Adrenolytic antihypertensive medications (TC class 3620xx) | 1, 2, 3 |
| broadbpmed | if (antihypertens=1 or betablocker=1 or calcblocker=1 or diuretic=1) then broadbpmed=1;  else broadbpmed = max(antihypertens, betablocker, calcblocker, diuretic); | Use of any in a broad classification of blood pressure medications including antihypertensive, beta-blocker, calcium channel blocker or diuretic. | 1, 2, 3 |
| antihyperlipid | substr(tccode,1,2) ='39' | Antihyperlipidemic medication (TC class 39xxxx) | 1, 2, 3 |
| anticoag | substr(tccode,1,2) ='83' | Anticoagulant medication (TC class 83xxxx) | 1, 2, 3 |
| antiplat | substr(tccode,1,4) ='8515' | Antiplatelet medication: Platelet aggregation inhibitors (TC class 8515xx) | 1, 2, 3 |
| cox2inhib | substr(tccode,1,6)='661005' | Cyclooxygenase 2 [COX-2] inhibitors (TC class 661005) | 1, 2, 3 |
| betablocker | substr(tccode,1,2) ='33' | Beta-blocker medication (TC class 33xxxx) | 1, 2, 3 |
| alphablocker | substr(tccode,1,6) ='363000' | Alpha-blocker medication (TC class 363000) | 1, 2, 3 |
| vasodilator | substr(tccode,1,4) ='3640' | Vasodilator medication (TC class 3640xx) | 1, 2, 3 |
| nitrate | substr(tccode,1,6) ='321000' | Nitrate medication (TC class 3210000) | 1, 2, 3 |
| calcblocker | substr(tccode,1,2) ='34' | Calcium Blocker medication (TC class 34xxxx) | 1, 2, 3 |
| calcblockerbroad | substr(tccode,1,2) ='34' or substr(tccode,1,6)='369915' or substr(tccode,1,6)='369925' | Broad classification of calcium channel blocker medication:  Calcium Blockers (TC class 34xxxx) or  ACE Inhibitors & Calcium Channel Blockers (TC class 369915) or  Beta Blocker & Calcium Channel Blocker Combinations (TC 369925) | 1, 2, 3 |
| diuretic | substr(tccode,1,2) ='37' | Diuretic medication (TC class 37xxxx) | 1, 2, 3 |
| antiarrhythmic | substr(tccode,1,2) ='35' | Anti-arrhythmic medication (TC class 35xxxx) | 1, 2, 3 |
| statin | substr(tccode,1,4) ='3940' | Statin medication (HMG CoA Reductase Inhibitors, TC class 3940xx) | 1, 2, 3 |
| oraldiab | substr(tccode,1,2) ='27' and substr(tccode,3,2)<>'10' | Oral diabetic medication: Anti-diabetic (TC class 27xxxx ), excluding Insulin (TC class 2710xx) | 1, 2, 3 |
| insulin | substr(tccode,1,4) ='2710' | Insulin (TC class 2710xx) | 1, 2, 3 |
| hrt | substr(tccode,1,2) in ('24', '25', '26') | Hormone replacement therapy medication:  Estrogens (TC class 24xxxx) or  Contraceptives (TC 25xxxx ) or  Progestins (TC 26xxxx) | 1, 2, 3 |
| loopdiur | substr(tccode,1,6)='372000' | Loop diuretics medication (TC 372000) | 1, 2, 3 |
| thiazdiur | substr(tccode,1,6)='376000' | Thiazides and Thiazide-like diuretics (TC class 376000) | 1, 2, 3 |
| potassdiur | substr(tccode,1,6)='375000' | Potassium sparing diuretics (TC class 375000) | 1, 2, 3 |
| combdiur | substr(tccode,1,4)='3799' | Combination diuretics (TC class 3799xx) | 1, 2, 3 |
| beta\_diuretic | substr(tccode,1,6) ='369920' | Beta-blocker and diuretic combinations (TC class 369920) | 1, 2, 3 |
| acearb | substr(tccode,1,6) in ('361000', '361500') | ACE-inhibitor (TC class 361000) or Angiotensin II receptor antagonist (TC class 361500) medication | 1, 2, 3 |
| digoxin | substr(tccode,1,6)='312000' | Digoxin medication (Cardiac Glycosides, TC class 312000)  NOTE: This is the same TC drug class identified by Arun as ‘digitalis’ for the modified Gothenburg algorithm. | 1, 2, 3 |
| hfmed | Visit 1: hfmed = (msra30e='Y');  Visit 2: hfmed = (msrb29e=1);  Visit 3: hfmed = (msrc29e=1); | Self-reported HF medication usage based on MSRA30Em question: Took medications for heart failure. | 1, 2, 3 |

**Variable:** hfhx

**Gothenburg Criteria:**

**Background:**

The Gothenburg score was developed in 1987 by Eriksson and colleagues as a heart failure screening tool derived from cardiac, pulmonary and HF medication components. 2,3 In a study published in 2004, Fonseca and colleagues evaluated the performance of several heart failure algorithms and found the Gothenburg criteria to have a sensitivity of 83.5% and specificity of 80.9%.4 In a 2010 ARIC study, Avery and colleagues identified questions from the ARIC exam for a self-reported Gothenburg criteria for heart failure grading. They tested this self-report only version with a self-report plus physical exam version (added physical examination for rales, rhonchi and atrial fibrillation on ECG) and found excellent agreement.5-7 They found a very strong association between the self-report only version and incident heart failure hospitalization. We propose to adopt their approach by mapping their ARIC questions to JHS questions, and adding newer JHS questions when available (additional CHD variables, AF from ECG or history when available, specific angina response to chest pain question).

**Gothenburg score:**

A points system that assigns heart failure grades depending on medical history, physical findings, and drug treatment. The following grades are assigned: Grade of 0 (HF absent) if all 3 scores are 0; Grade 1 (latent) if cardiac

score > 0 and pulmonary and therapy score = 0; Grade 2 (manifest heart failure) if cardiac score > and either

pulmonary or therapy score > 0; Grade 3 if cardiac score > 0 and both pulmonary and therapy score > 0; and Grade 4

if the person died in heart failure.

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| --- | --- | --- |
| **Cardiac score** | **ARIC Questions** | **JHS variables** |
| Prior coronary heart disease (1 pt) | Positive response to the question:  Has a doctor ever said you had a heart attack? | Positive history or response to ANY of the questions (note: the JHS derived variable CHDhx can be substituted for items a-e below):   1. PFHA4A: Has doctor said you had heart attack (missing at exam 2)? 2. MHXA16/17: Saw a doctor because of chest pain? What did the doctor say it was? (H=Heart Attack) 3. MHXA30/31: Saw a doctor because of this pain? What did the doctor say it was? (H=Heart Attack) 4. MHXA32: Hospitalized for heart attack a week+? 5. MI from ECG (missing at exam 2) 6. MHXA52A: Have a coronary bypass? 7. MHXA54A: Ever had angioplasty of coronary arteries? |
| Prior angina pectoris (1 pt) | Positive response to ALL of the questions:   1. Have you ever had any pain or discomfort in your chest? 2. ‘Do you get it when you walk uphill or hurry’ *or* ‘Do you get it when you walk at an ordinary pace on the level’? 3. Response=’Stop or slow down’ when asked ‘What do you do if you get it while you are walking?’ 4. Response=’Relieved’ when asked ‘If you stand still, what happens?’ 5. Response=’10 min or less’ when asked ‘How soon?’ | Positive response to EITHER SERIES of questions:  1) MHXA16:/17 Saw a doctor because of chest pain? What did the doctor say it was? (A=Angina) *OR*  2) Positive response to ALL of the questions:   1. MHXA8: Ever had any pain/discomfort in chest? 2. MHXA9: ‘Chest pain walking up hill?’ *or* MHXA10: ‘Chest pain walking at ordinary pace on level?’ 3. MHXA11: What do you do if you get chest pain while you are walking? Response=S (Stop or slow down) 4. MHXA12: If you stand still, what happens? Response=R (Relieved) 5. MHXA13: Time required for relief of chest pain. Response=L (10 min or less) |
| Swollen legs at end of day (1 pt) | Positive response to BOTH questions:   1. Have you ever had swelling of your feet or ankles (excluding pregnancy) 2. Did it tend to come on during the day and go down overnight? | Positive response to BOTH questions:  MHXA49: Ever have swelling of the feet or ankles?  MHXA50: Swelling come during day, go down overnight? |
| Nocturnal dyspnea (1 pt) | Positive response to the question:  Have you ever been awakened at night by trouble breathing? | Positive response to the question:  MHXA48: Ever awakened by trouble breathing? |
| Pulmonary rales at physical exam | N/A | N/A |
| Atrial fibrillation on ECG (1 pt) | N/A | Positive response to ANY of the following:   1. ECGA15: Arrhythmia Minnesota code 8-3-1 (value=1; missing at exam 2). 2. For exam 2 use: Atrial fibrillation on prior exam *or* Anti-arrhythmic medication (TC 35xxxx) |
| **Pulmonary disease score** |  |  |
| History of chronic bronchitis (1 pt) | Positive response to the question:  Have you ever had chronic bronchitis? | Positive response to ANY series of questions:   1. PFHA10A: Has the doctor said you have asthma?   RPAA13: Have you ever had asthma? AND RPAA14: Was it confirmed by a doctor? |
| History of asthma (1 pt) | Positive response to the question:  Have you even had chronic asthma? | Positive response to ANY series of questions:   1. PFHA10A: Has the doctor said you have asthma?   RPAA13: Have you ever had asthma? AND RPAA14: Was it confirmed by a doctor? |
| History of coughing/phlegm/wheezing (1 pt) | Positive response to ANY of the questions:   1. Do you usually have a cough? 2. Do you usually bring up phlegm from your chest? 3. Does your chest ever sound wheezy or whistling apart from colds? | Positive response to ANY of the questions:   1. RPAA1: Do you usually have a cough? 2. RPAA6: Bring up phlegm, 3+ months? 3. RPAA8: Chest ever sound wheezy w/out cold? 4. RPAA9: Chest sound wheezy most days? |
| Presence of rhonchi at physical exam | N/A | N/A |
| **Therapy score** |  |  |
| History of digitalis administration (1 point) | Medication codes (312xxx) | Search medications for digitalis drug code= cardiac glycosides (TC 312xxx) |
| History of diuretic administration (1 point) | Medication codes (37xxxx) | Search medications for drug class: Diuretics (Loop diuretics, mercurial diuretics, osmotic diuretics, potassium sparing diuretics; TC 37xxxx) |

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