Q-METRIC Sickle Cell Disease Measure 13 ***Transcranial Doppler Ultrasonography Screening for Children with Sickle Cell Disease***

Technical specifications for Section II. Detailed Measure Specifications

Sickle Cell Disease

Measure 13: Transcranial Doppler Ultrasonography Screening for Children with Sickle Cell Disease

Description

The percentage of children ages 2 through 15 years old (≥24 months but <16 years of age) during the measurement year and identified as having Sickle Cell Anemia who received Transcranial Doppler ultrasonography. A higher proportion indicates better performance as reflected by appropriate testing.

Calculation

This measure requires administrative data and is calculated as follows:

The percentage of eligible children who received Transcranial Doppler ultrasonography (numerator divided by denominator).

Definitions

Intake period — January 1 of the measurement year through December 31 of the measurement year.

Transcranial Doppler ultrasonography — Test measuring blood flow through intercranial arteries (see Table 13-A).

Table 13-A: Acceptable Transcranial Doppler Ultrasonography tests

TCD Description	CPT code
Complete study	93886
Limited study	93888
Vasoreactivity study	93890
Emboli detection without intravenous microbubble injection	93892
Emboli detection with intravenous microbubble injection	93893

Eligible Population

Ages — Children ages 24 months or older on January 1 of the measurement year but younger than 16 years on December 31 of the measurement year.

Enrollment — Continuous enrollment during the measurement year.

Event/Diagnosis Identify members as having sickle cell disease who had appropriate sickle cell disease-related ICD-9 codes on three or more separate healthcare encounters (see Table 13-B) during the measurement year.

Table 13-B: Codes to Identify Sickle Cell Disease

Condition Name	Hemoglobin Screening Result	ICD-9 Code(s)
Hb SS-disease (sickle cell anemia)	Hb F,S	282.6, 282.61, 282.62

Specification

Denominator The eligible population.

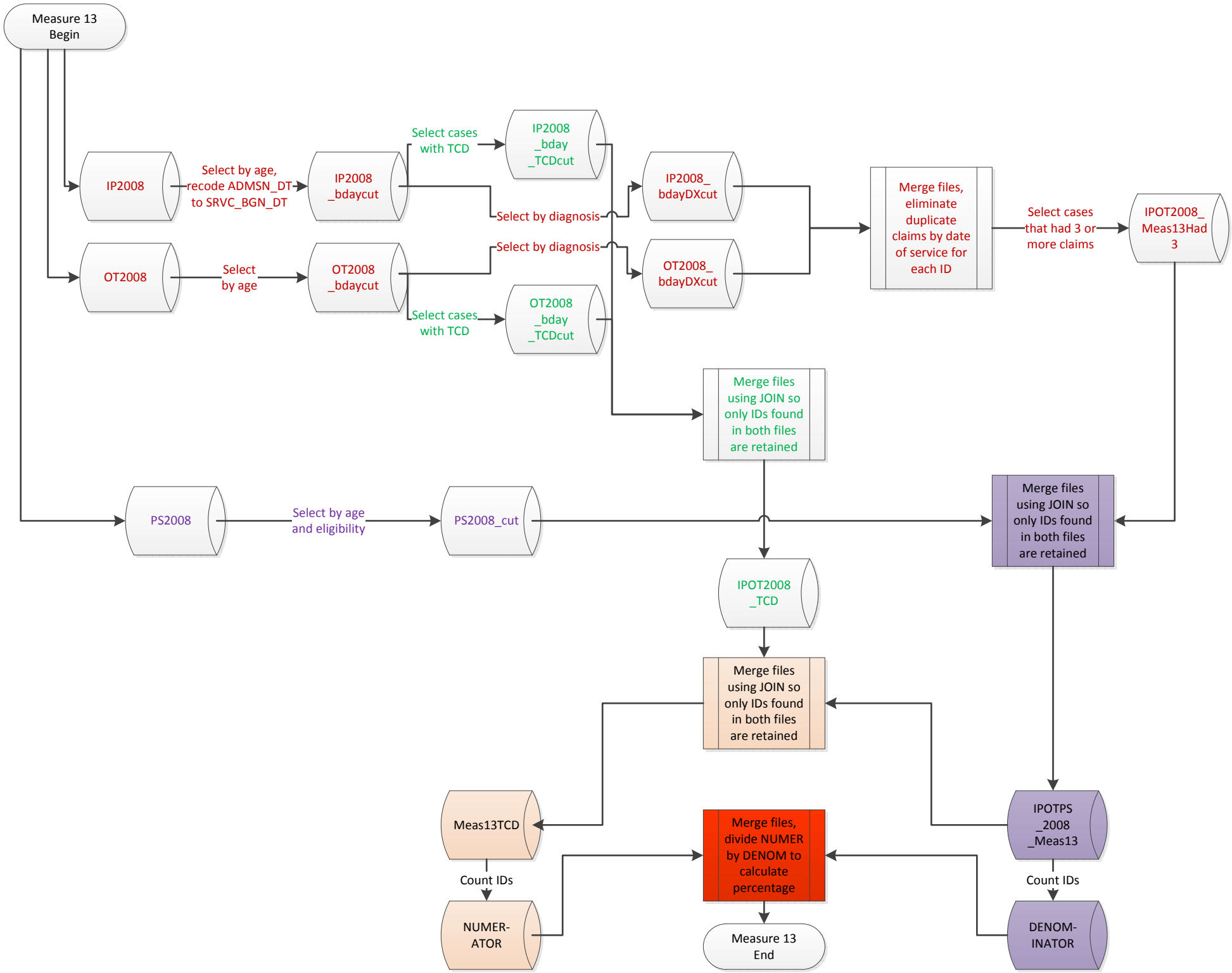
Numerator Eligible children who received Transcranial Doppler ultrasonography.

Exclusions

- Children who have a 2nd or 16th birthday during the measurement year.
- Claims in the administrative records for any of the sickle cell disease variants listed in Table 13-C do not count toward the "three or more separate healthcare encounters" criteria.

Table 13-C: Excluded Initial Hemoglobin Screening Results

Condition Name	Hemoglobin Screening Result	ICD-9 Code(s)
Hb beta zero-thalassemia	Hb F only	282.49
Hb S beta-thalassemia	Hb F,S,A	282.41, 282.42
Hb C-disease	Hb F,C	282.7
Hb C beta-thalassemia	Hb F,C,A	282.49
Hb D beta-thalassemia	Hb F,D,A	282.49
Hb E beta-thalassemia	Hb F,E,A	282.49
Hb E-disease	Hb F,E	282.7
Hb H-disease	Hb F,H	282.49
Hb SC-disease	Hb F,S,C	282.63, 282.64
Hb SD-disease	Hb F,S,D	282.68, 282.69
Hb SE-disease	Hb F,S,E	282.68, 282.69
Hb C-carrier	Hb F,A,C	282.7
Hb D-carrier	Hb F,A,D	282.7
Hb E-carrier	Hb F,A,E	282.7
Hb S (sickle)-carrier	Hb F,A,S	282.5


Measure 13 Begin
IP2008
Select by age, recode ADMSN_DT to SRVC_BGN_DT
IP2008 _bdaycut
Select cases with TCD
IP2008 _bday _TCDcut
Select by diagnosis
IP2008_ bdayDXcut
OT2008
Select by age
OT2008 _bdaycut
Select by diagnosis
Select cases with TCD
OT2008 _bday _TCDcut
OT2008_ bdayDXcut
Merge files, eliminate duplicate claims by date of service for each ID
Select cases that had 3 or more claims
IPOT2008_ Meas13Had 3
Merge files using JOIN so only IDs found in both files are retained
PS2008
Select by age and eligibility
PS2008_cut
Merge files using JOIN so only IDs found in both files are retained
IPOT2008 _TCD
Merge files using JOIN so only IDs found in both files are retained
Meas13TCD
Count IDs
NUMER-ATOR
Merge files, divide NUMER by DENOM to calculate percentage
Measure 13 End
IPOTPS _2008 _Meas13
Count IDs
DENOM-INATOR

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/*This syntax finds kids of a certain age who have certain SCD diagnoses, as
specified by Measure 13.  Cases with 3 or more health care encounters are retained,
the rest are discarded.  The retained group is the denominator.  The denominator
group is then reviewed to determine how many of the kids received Transcranial
Doppler (TCD) tests.  This group is the numerator*/

/*********************************************/
/**********MEASUREMENT YEAR 2005*************/
/*********************************************/


LIBNAME MI 'D:\MI only';
proc printto log='Z:\MAX data\SYNTAX\LOGS\Meas13 MI 2005.log' new; run;


/*******It's faster to remove cases from IP and OT files, then merge**********/


/***Identify cases in 2005 data -- ie "measurement year"***/


/*Need to include TCD's that may have been performed during visits for a non-SCD event.
So it is necessary to create a file that is cut by birthday but not DxSCD.  The bdayCUT file
will be merged in after denominator cases are correctly identified*/

/**IP**/
DATA MI.ip2005_MI_bdayCUT (compress = yes); set MI.ip2005_MI;

IF EL_DOB > '20021231'  /*deletes cases who will be less than 2yrs old on Jan 1, 2005*/
      OR EL_DOB < '19900101' /*deletes cases who turn 16yrs or older before Dec 31, 2005*/
      THEN delete;



DATA MI.ip2005_MI_bdayDxCUT (compress = yes); set MI.ip2005_MI_bdayCUT;
/*Only include ICD codes specified in Measure 13*/
/*IP files have up to 9 DIAG_CD variables*/
IF DIAG_CD_1 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_2 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_3 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_4 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_5 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_6 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_7 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_8 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_9 in ("02826","2826","28261","28262","D570","D571")
      THEN DxSCD=1; ELSE DxSCD=0;

IF DxSCD=0 THEN delete;

/*Recode admission date so it has the same variable name as the OT files*/
ADMSN_DT = SRVC_BGN_DT;
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/*title1 'IP2005_bdayDxCUT';
proc freq; tables ADMSN_DT SRVC_BGN_DT DxSCD; run; This frequency is for syntax testing only*/


/**OT**/
DATA MI.ot2005_MI_bdayCUT (compress = yes); set MI.ot2005_MI;


IF EL_DOB > '20021231'  /*deletes cases who will be less than 2yrs old on Jan 1, 2005*/
      OR EL_DOB < '19900101' /*deletes cases who turn 16yrs or older before Dec 31, 2005*/
      THEN delete;

DATA MI.ot2005_MI_bdayDxCUT (compress = yes); set MI.ot2005_MI_bdayCUT;
/*Only include ICD codes specified in Measure 13*/
/*OT files only have 2 DIAG_CD variables*/
IF DIAG_CD_1 in ("02826","2826","28261","28262","D570","D571")
 OR DIAG_CD_2 in ("02826","2826","28261","28262","D570","D571")
      THEN DxSCD=1; ELSE DxSCD=0;

IF DxSCD=0 THEN delete;

/*title1 'ot2005_bdayDxCUT';
proc freq; tables SRVC_BGN_DT DxSCD; run; This frequency is for syntax testing only*/


/****Merge cut by bday only version of IP and OT files****/


/*This file is not cut by Dx, and will be merged in at the end, after list of desired
IDs has been created*/


DATA MI.ip2005_MI_Meas13_bdayTCDCUT; SET MI.ip2005_MI_bdayCUT;
      KEEP TCD MSIS_ID ADMSN_DT PRCDR_CD_1 PRCDR_CD_2 PRCDR_CD_3
            PRCDR_CD_4 PRCDR_CD_5 PRCDR_CD_6;

/*Identify cases that received TCD (identified by procedure code) as specified by Measure 13*/
IF PRCDR_CD_1 in ('93886' '93888' '93890' '93892' '93893')
 OR PRCDR_CD_2 in ('93886' '93888' '93890' '93892' '93893')
 OR PRCDR_CD_3 in ('93886' '93888' '93890' '93892' '93893')
 OR PRCDR_CD_4 in ('93886' '93888' '93890' '93892' '93893')
 OR PRCDR_CD_5 in ('93886' '93888' '93890' '93892' '93893')
 OR PRCDR_CD_6 in ('93886' '93888' '93890' '93892' '93893')

      THEN TCD=1; ELSE TCD=0;

IF TCD=0 THEN delete;

/*title1 'ip2005_MI_Meas13_bdayTCDCUT';
proc freq; tables TCD MSIS_ID PRCDR_CD_1 PRCDR_CD_2 PRCDR_CD_3 PRCDR_CD_4 PRCDR_CD_5
                  PRCDR_CD_6; run; This frequency is for syntax testing only*/
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```
/*Identify cases that received TCD (identified by procedure code) as specified by Measure 13*/
DATA MI.ot2005_MI_Meas13_bdayTCDCUT; SET MI.ot2005_MI_bdayCUT;
      KEEP TCD MSIS_ID SRVC_BGN_DT PRCDR_CD;

IF PRCDR_CD in ('93886' '93888' '93890' '93892' '93893')

      THEN TCD=1; ELSE TCD=0;

IF TCD=0 THEN delete;

/*title1 'ot2005_MI_Meas13_bdayTCDCUT';
proc freq; tables TCD MSIS_ID PRCDR_CD; run; This frequency is for syntax testing only*/



DATA MI.ipot2005_MI_Meas13_bdayTCDCUT;
      SET MI.ip2005_MI_Meas13_bdayTCDCUT MI.ot2005_MI_Meas13_bdayTCDCUT; run;

/*title1 'ipot2005_MI_Meas13_bdayTCDCUT';
proc freq; tables TCD MSIS_ID PRCDR_CD PRCDR_CD_1 PRCDR_CD_2 PRCDR_CD_3 PRCDR_CD_4
PRCDR_CD_5
            PRCDR_CD_6; run; This frequency is for syntax testing only*/

/*Delete duplicate IDs (this not only deletes multiple claims for same TCD, it also ensures
that children who have 2 or more separate TCD's during the year are only counted once)*/

      Proc SQL;
            Create Table MI.ipot2005_MI_Meas13_bdayTCDdedup
            as Select Distinct MSIS_ID
            from MI.ipot2005_MI_Meas13_bdayTCDCUT
      Quit;

/*title1 'ipot2005_MI_Meas13_bdayTCDdedup';
proc freq; tables MSIS_ID; run; This frequency is for syntax testing only*/




/****Merge cut by bday AND Dx version of IP and OT files****/
DATA MI.ipot2005_MI_Meas13_bdayDxCUT;
      SET MI.ip2005_MI_bdayDxCUT MI.ot2005_MI_bdayDxCUT; run;

/*title1 'IPOT2005_CUT';
proc freq; tables DxSCD PRCDR_CD PRCDR_CD_1; run; This frequency is for syntax testing only*/



/*IP and OT visits occuring on the same date are considered to be part of a
single Healthcare Encounter (HCE).  Therefore, IP and OT files must be merged
BEFORE deleting duplicates by Date of Service.

IP and OT files use different variable names for Date of Service.  The IP files
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have had the variable recoded into a variable that matches the variable name for OT*/


/* de-dup source keys by loading into hash */
data MI.ipot2005_MI_meas13_dedup;
  set
    MI.ipot2005_MI_Meas13_bdayDxCUT (keep=MSIS_ID SRVC_BGN_DT)
    end=last;
  ;

  if _n_=1 then
    do;
      declare hash h0(ordered:'y',multidata:'n',hashexp:8);
      _rc=h0.defineKey('MSIS_ID','SRVC_BGN_DT');
      _rc=h0.defineData('MSIS_ID','SRVC_BGN_DT');
      _rc=h0.defineDone();
    end;

  _rc=h0.ref();

  /* write hash to target data set */
  if last then
    h0.output(dataset:'MI.inter');

run;

proc sql;
       create table MI.ipot2005_MI_Meas13Had3 as
       select MSIS_ID,
              count(distinct SRVC_BGN_DT) as numsepvisits
       from MI.inter
       group by MSIS_ID
       having count(distinct SRVC_BGN_DT) >= 3;
quit;


/*title1 'ipot2005_MI_Meas13Had3';
proc freq; tables numsepvisits MSIS_ID; run;This frequency is for syntax testing only*/

quit;


/*Use Person Summary file to create a list of eligible IDs based on continuous enrollment*/
DATA MI.ps2005_MI_CUT (compress = yes); set MI.ps2005_MI;

/*It's not necessary to restrict birth dates for PS files, but it's faster*/
IF EL_DOB > '20021231'  /*deletes cases who will be less than 2yrs old on Jan 1, 2005*/
       OR EL_DOB < '19900101' /*deletes cases who turn 16yrs or older before Dec 31, 2005*/
       THEN delete;

IF EL_ELGBLTY_MO_CNT < '12' THEN delete;

RUN;
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/*title1 'PS2005_CUT';
proc freq; tables EL_ELGBLTY_MO_CNT; run; This frequency is for syntax testing only*/



/*Merge ipot2005_MI_Meas13 and ps2005_MI*/
/*JOIN command only returns cases found in both files*/

        Proc SQL;
            Create Table MI.ipotps2005_MI_Meas13
            as Select a.*, b.MSIS_ID
            from MI.ipot2005_MI_Meas13Had3 a JOIN MI.ps2005_MI_CUT b
            on a.MSIS_ID=b.MSIS_ID;
        Quit;



/*Count the number of separate MSIS_ID's to find the denominator for Measure 13*/
/*Assign a row ID to facilitate merge*/
        Proc SQL;
            Create table MI.Meas13Denom
                as Select Count(MSIS_ID) as DENOM,
                Case When Count(MSIS_ID)> -1 Then 1
                    Else 0
                    End as ROWID
            From MI.ipotps2005_MI_Meas13;
        Quit;


/*title1 'Measure 13 DENOMINATOR';
proc freq; tables DENOM ROWID; run; This frequency is for syntax testing only*/
quit;



/*Merge all IDs that have had a TCD with IDs found in the denominator to find numerator*/
/*JOIN command only returns cases found in both files*/


        Proc SQL;
            Create Table MI.Meas13DenomTCD
            as Select a.MSIS_ID, b.*
            from MI.ipotps2005_MI_Meas13 a JOIN
                MI.ipot2005_MI_Meas13_bdayTCDdedup b
            on a.MSIS_ID=b.MSIS_ID;
        Quit;


/*title1 'Meas13Numerator';
proc freq; tables MSIS_ID; run; This frequency is for syntax testing only*/


/*Count the number of separate MSIS_ID's to find the numerator for Measure 13*/
/*Assign a row ID to facilitate merge*/
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Proc SQL;
      Create table MI.Meas13Numer
            as Select Count(MSIS_ID) as NUMER,
            Case When Count(MSIS_ID)> -1 Then 1
                  Else 0
                  End as ROWID
      From MI.Meas13DenomTCD;
Quit;


/*title1 'Measure 13 NUMERATOR';
proc freq; tables NUMER ROWID; run; This frequency is for syntax testing only*/
quit;

DATA MI.Measure13percent;
      MERGE MI.Meas13Denom MI.Meas13Numer;
      BY ROWID;

Meas13Percent = NUMER/DENOM;

format Meas13Percent percent8.2; run;

title1 'Measure 13 MI results 2005';
proc freq; tables NUMER DENOM Meas13Percent; run; /*This frequency provides the number for the numerator.*/
quit;
```