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    UTHSC

    PROGRAM NAME          :MMA MTM (Table 2 in proposal)

    PROJECT NAME          :Finding Equitable and Effective MTM Eligibility
Criteria

    DESCRIPTION           :MTM ELIGIBILITY CRITERIA

    SOFTWARE VERSION     :SAS Windows 9.3

    RELATED PROGRAMS     :N/A

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    REQUIREMENTS:

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    Ver#  Author & Program History Description      Peer reviewer

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    001  Yanru Qiao                 production version of the program

    002  Dr. Junling Wang           Peer reviewer (Reviewed at September
28th, 2016)

*****************************************************************************
;


DM LOG 'CLEAR'; DM OUTPUT 'CLEAR';
* Output SAS Library *;
libname ccw 'F:\jwang26\CCW'; * <-- Place Output Library Path Here *;
libname ccw2 'F:\jwang26\CCW2';


proc import out=ccw2.ccs datafile="F:\jwang26\part D
data\ccs_multi_dx_tool_2013.csv"
/* Downloaded from website of https://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp
This is used to calculated the chronic conditions for MTM eligibility
criterion
We used this method since Dr. Wang has confirmed the cccodex for chronic
conditions by using MEPS database*/
DBMS=csv
replace;
getnames=yes;
run;

data ccs1;
set ccw2.ccs;
diag=icd_9_cm_code;
```

```sas
cccodexa=ccs_lvl_3_label*1;
run;
proc sort data=ccw2.d29 out=disease; by diag; run;/*ccw2.d29 is from
independent variable program—which is a list of comprehensive diagnosis
code*/
proc sort data=ccs1 out=ccs2; by diag; run;
data disease2;
merge disease ccs2;
by diag;
run;

data disease3;
set disease2;
if hicno=''   then delete;
run;

data disease4; set disease3;
if cccodexa=49 or cccodexa=50 or cccodexa=186 then diabetes=1; else
diabetes=0;

if cccodexa=98 or cccodexa=99 or cccodexa=183 then hypertension=1; else
hypertension=0;
if cccodexa>98 and cccodexa<109 then cardiac=1; else cardiac=0;
if cccodexa=98 or cccodexa=99 or cccodexa=183 or (cccodexa>98 and
cccodexa<109) then cardiovascular=1; else cardiovascular=0;

if cccodexa=127 then COPD=1; else COPD=0;
if cccodexa=128 then asthma=1; else asthma=0;
if cccodexa=127 or cccodexa=128 then respiratory=1; else respiratory=0;

if cccodexa=157 or cccodexa=158 then endstagerenal=1; else endstagerenal=0;
if cccodexa=156 or cccodexa=161 then notendstage=1; else notendstage=0;
if cccodexa=156 or cccodexa=157 or cccodexa=158 or cccodexa=161 then renal=1;
else renal=0;

/*ALL CODES FOR CHRONIC CONDITIONS*/

run;

proc sort data=disease4 out=ccw2.disease5;
by hicno;
run;


/****************set all the missing value of chronic diseases to
0*************************************/
data disease6;
set ccw2.disease5;;
if mental=. then mental=0; if dementia=. then dementia=0; if connective=.
then connective=0;
if backpain=. then backpain=0; if osteoarth=. then osteoarth=0;
if rheumatoid=. then rheumatoid=0; if renal=. then renal=0; if ulcer=. then
ulcer=0;
if liver=. then liver=0; if asthma=. then asthma=0; if COPD=. then COPD=0;
if circula=. then circula=0; if cerebro=. then cerebro=0; if cardiac=. then
cardiac=0;
if hypertension=. then hypertension=0; if glaucoma=. then glaucoma=0;
```

```sas
if epilepsy=. then epilepsy=0; if sclerosis=. then sclerosis=0; if
parkinson=. then parkinson=0;
if gout=. then gout=0; if hyperlipi=. then hyperlipi=0;
if diabetes=. then diabetes=0; if thyroid=. then thyroid=0; if cancer=. then
cancer=0; if HIV=. then HIV=0;
run;

/*************************************delete duplicated chronic
diseases*********************************************************/
proc sort data= disease6 nodupkey;
by hicno mental dementia connective backpain osteoarth rheumatoid
endstagerenal notendstage ulcer liver asthma COPD
circula cerebro cardiac hypertension glaucoma epilepsy sclerosis parkinson
gout hyperlipi
diabetes thyroid cancer HIV;
run;

/************************************count number of chronic
diseases*******************************************************/
proc means data=disease6 noprint;
class hicno ;
var mental dementia connective backpain osteoarth rheumatoid endstagerenal
notendstage ulcer liver asthma COPD
circula cerebro cardiac hypertension glaucoma epilepsy sclerosis parkinson
gout hyperlipi
diabetes thyroid cancer HIV;
output out=ccw2.disease7 max=;
run;

data disease8; set ccw2.disease7 ;
diseasenumber=mental+dementia+connective+backpain+osteoarth+rheumatoid+endsta
gerenal+notendstage+ulcer+liver+asthma+COPD+
circula+cerebro+cardiac+hypertension+glaucoma+epilepsy+sclerosis+parkinson+go
ut+hyperlipi+
diabetes+thyroid+cancer+HIV;

corenumber=/*cardiovascular*/
cardiac+hypertension+diabetes+mental+/*respiratory*/copd+asthma+/*bone*/osteo
arth+rheumatoid +
endstagerenal+dementia+hyperlipi;
run;

data disease9;
set disease8;
bene_id=hicno;
keep bene_id diseasenumber corenumber ;
if bene_id ne '';
run;

proc sort data=disease9 out=ccw2.disease10;
by bene_id;
run;

data drug1;
set ccw2.pde2013;
if DRUG_CVRG_STUS_CD='C'or DRUG_CVRG_STUS_CD='E';/* check on plan
characteristics to see if a person in two or one plan*/
```

```
run;

/* Calculate the drug cost*/
data ccw2.drug2;
set drug1;
cost=TOT_RX_CST_AMT;
if cost=. then cost=0;
keep bene_id cost;
run;
proc means data =ccw2.drug2 noprint;
  class bene_id;
    var cost;
 output out=drug2a  sum=;
run;

data drug2b;
set drug2a;
keep bene_id cost;
if bene_id ne '';
run;

proc sort data=drug2b out=ccw2.drug2b;
by bene_id;
run;
/*count of prescriptions for 2013;*/

data drug3; set drug1;  run;
proc sort data=drug3 out=drug3a nodupkey; by bene_id GNN; run;
proc freq data=drug3a noprint;
tables bene_id/out=drug3b;
run;
data ccw2.drug3c; set drug3b;
countdrug=count;
drop count percent;
run;


data ccw2.mtm;
merge  ccw2.disease10 ccw2.drug2b ccw2.drug3c;
by bene_id;
run;

/* Set up the MTM eligibility criteria*/

data ccw2.mtm1;
set ccw2.mtm;
if countdrug=. then countdrug=0;
if diseasenumber=. then diseasenumber=0;
if corenumber=. then corenumber=0;

/*number of drug*/
if countdrug>1 then medcri1=1; else medcri1=0;
if countdrug>5 then medcri2=1; else medcri2=0;
if countdrug>7 then medcri3=1; else medcri3=0;
if countdrug>14 then medcri4=1; else medcri4=0;

/*number of chronic conditions*/
```

```
if diseasenumber>1 then condicri1=1; else condicri1=0;
if diseasenumber>2 then condicri2=1; else condicri2=0;
if diseasenumber>4 then condicri3=1; else condicri3=0;

if cost=. then cost=0;
cost2009=375.613*cost/425.134;/*Adjust the cost according to CPI*/
cost2013=cost;
cost2015=cost*446.752/425.134;
format cost2009 cost2013 cost2015 9.2;

if cost2009>4000 then expcri109=1; else expcri109=0;
if cost2013>3144 then expcri113=1; else expcri113=0;
if cost2015>620  then expcri115=1; else expcri115=0;

* 2009 criterion;

if medcri3=1 and condicri2=1 and expcri109=1 then main09=1; else
main09=0;/*8*3*/
if medcri1=1 and condicri1=1 and expcri109=1 then sensi109=1; else
sensi109=0;/*2*2*/
if medcri1=1 and condicri2=1 and expcri109=1 then sensi209=1; else
sensi209=0;/*2*3*/
if medcri1=1 and condicri3=1 and expcri109=1 then sensi309=1; else
sensi309=0;/*2*5*/
if medcri2=1 and condicri1=1 and expcri109=1 then sensi409=1; else
sensi409=0;/*6*2*/
if medcri2=1 and condicri2=1 and expcri109=1 then sensi509=1; else
sensi509=0;/*6*3*/
if medcri2=1 and condicri3=1 and expcri109=1 then sensi609=1; else
sensi609=0;/*6*5*/
if medcri3=1 and condicri1=1 and expcri109=1 then sensi709=1; else
sensi709=0;/*8*2*/
if medcri3=1 and condicri3=1 and expcri109=1 then sensi809=1; else
sensi809=0;/*8*5*/
if medcri4=1 and condicri1=1 and expcri109=1 then sensi909=1; else
sensi909=0;/*15*2*/
if medcri4=1 and condicri2=1 and expcri109=1 then sensi1009=1; else
sensi1009=0;/*15*3*/
if medcri4=1 and condicri3=1 and expcri109=1 then sensi1109=1; else
sensi1109=0;/*15*5*/


* 2013 Criterion;
if medcri3=1 and condicri2=1 and expcri113=1 then main13=1; else
main13=0;/*8*3*/
if medcri1=1 and condicri1=1 and expcri113=1 then sensi113=1; else
sensi113=0;/*2*2*/
if medcri1=1 and condicri2=1 and expcri113=1 then sensi213=1; else
sensi213=0;/*2*3*/
if medcri3=1 and condicri1=1 and expcri113=1 then sensi313=1; else
sensi313=0;/*8*2*/

* 2015 Criterion;
if (medcri1=1 and corenumber>=1) and condicri1=1 and expcri115=1 then
main15=1; else main15=0;
run;
```

```
/*******************test****************************************/
proc sort data=ccw2.mbsfcostuse2013; by bene_id;run;
data testb;
merge ccw2.mbsf2b ccw2.mbsfcostuse2013(in=in1) ccw2.exclude(in=in2);
by bene_id;
if in1 and not in2;
run;


proc means data =testb noprint;
  class race;
   var PTD_TOTAL_RX_CST;
 output out=ccw2.partdcost1  ;
run;
```