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*****;
* Project          : ZRHM-REXA-07-JP
*
* Program name     : T150204440101_ZRHM-REXA-07_V1.sas
*
* Author          : L. Yan
*
* Date created     : 05/20/2015
*
* Purpose         : Table T150204440101
*
* Revision History :
*
* Date          Author      Ref      Revision (Date in YYYYMMDD format)
*
*****;

%let prgname=T150204440101_ZRHM_REXA_07_JP_V1;
options mprint;

options sasautos=("W:\pmp07\macros" sasautos) notes;
%init(delivery=9);

%titlecsv(prgname=&prgname., version=3);

%put &title1;
%put &title2;
%put &APPENDIX;
%put &endpoint;
%put &outname.;

options missing="";

%macro cal_summary_pvalue(where=, outnum=, var=, in=, pflg=, decimal=1);

proc sort data=&in. out=anadt_&outnum.;
by usbjid;
where &where. ;
run;

proc sort data=anadt_&outnum.;
by trtd;
run;

proc means data = anadt_&outnum. noprint;
by trtd;
var &var.;
output out=xlab_&outnum. n=n mean=mean median=med std=sd min=min max=max q1=q1 q3=q3 lclm=lclm uclm=uclm;
run;

data xlab_&outnum.;
set xlab_&outnum.;
n1 = trim(left(compress(put(n, 8.))));
%if &decimal=1 %then %do;
if sd > . then mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' ('||trim(left(compress(put(ceil(sd*1000)/1000, 8.%eval(&decimal+2))))))||')';
else mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' (NA)';
%end;
%if &decimal=0 %then %do;
if sd > . then mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' ('||trim(left(compress(put(ceil(sd*100)/100, 8.%eval(&decimal+2))))))||')';
else mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' (NA)';
%end;

ci1=trim(left(compress(put(floor(lclm*100)/100, 8.%eval(&decimal+1))))))||', '||trim(left(compress(put(ceil(uclm*100)/100, 8.%eval(&decimal+1))))));
median1 = trim(left(compress(put(med, 8.%eval(&decimal+1)))));
q1q3 = trim(left(compress(put(q1, 8.%eval(&decimal+1))))))||', '||trim(left(compress(put(q3, 8.%eval(&decimal+1))))));
;
min1 = trim(left(compress(put(min, 8.%eval(&decimal+0))))))||', '||trim(left(compress(put(max, 8.%eval(&decimal+0))))));
row0="";
run;

proc means data = anadt_&outnum. noprint;
by trtd;
var logaval;
output out=xlab1_&outnum. n=n mean=mean lclm=lclm uclm=uclm std=std;
run;

data xlab1_&outnum. ;
set xlab1_&outnum. ;
Estimate1 = exp(mean); /* Ratio of geometric mean */

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LowerCL = exp(lclm); /* 95% CI lower bound */
UpperCL = exp(uclm); /* 95% CI upper bound */
CVperc=100*sqrt(exp(std**2)-1);
run;

data xlab1_&outnum.;
length geomean geoci $100;
set xlab1_&outnum.;
geomean=strip(put(estimate1, 8.2))||" ("||strip(put(ceil(CVperc*100)/100, 8.2)) ||")";
geoci=strip(put(floor(LowerCL*100)/100, 8.2))||", "||strip(put(ceil(UpperCL*100)/100, 8.2));
keep trtcd geomean geoci;
run;

proc sort data=xlab1_&outnum.;
by trtcd;
run;

proc sort data=xlab_&outnum.;
by trtcd;
run;

data xlab_&outnum.;
merge xlab_&outnum.(in=a) xlab1_&outnum.;
by trtcd;
run;

proc transpose data = xlab_&outnum. out=xlab_1_&outnum.;
id trtcd;
var row0 n1 mean1 ci1 median1 q1q3 min1 geomean geoci;
run;

data rep_&outnum.;
length _name_ _1 _2 /*_3*/ ord1 $100;
set xlab_1_&outnum.;
ord1="&outnum";
ordnum=input(ord1, best.);
if upcase(_name_)="ROW0" then do; _name_=" "; sord=-1; end;
if upcase(_name_)="N1" then do; _name_="n"; sord=0; end;
if upcase(_name_)="GEOMEAN" then do; _name_="Geometric Mean (CV%)"; sord=1; end;
if upcase(_name_)="GEOCI" then do; _name_="95% CI"; sord=2; end;

if upcase(_name_)="MEAN1" then do; _name_="Mean (SD)"; sord=6; end;
if upcase(_name_)="CI1" then do; _name_="95% CI of Mean"; sord=7; end;
if upcase(_name_)="MEDIAN1" then do; _name_="Median"; sord=3; end;
if upcase(_name_)="Q1Q3" then do; _name_="Q25, Q75"; sord=4; end;
if upcase(_name_)="MIN1" then do; _name_="Min, Max"; sord=5; end;
run;

data rep;
set rep rep_&outnum.;
run;

%mend;

%macro cal_sumary_pvalue1(where=, outnum=, var=, in=, pflg=, decimal=1);

proc sort data=&in. out=anadt_&outnum.;
by usubjid;
where &where. ;
run;

proc sort data=anadt_&outnum.;
by trtcd;
run;

proc means data = anadt_&outnum. noprint;
by trtcd;
var &var.;
output out=xlab_&outnum. n=n mean=mean median=med std=sd min=min max=max q1=q1 q3=q3 lclm=lclm uclm=uclm;
run;

data xlab_&outnum.;
set xlab_&outnum.;
n1 = trim(left(compress(put(n, 8.))));
%if &decimal=1 %then %do;
if sd > . then mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' ('||trim(left(compress(put(ceil(sd*1000)/1000, 8.%eval(&decimal+2))))))||')';
else mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' (NA)';
%end;
%if &decimal=0 %then %do;
if sd > . then mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' ('||trim(left(compress(put(ceil(sd*100)/100, 8.%eval(&decimal+2))))))||')';

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else mean1 = (trim(left(compress(put(mean, 8.%eval(&decimal+1))))))||' (NA)';
%end;

ci1=trim(left(compress(put(floor(lclm*100)/100, 8.%eval(&decimal+1))))||', '||trim(left(compress(put(ceil(uc1m*100)/1
00, 8.%eval(&decimal+1))))));
median1 = trim(left(compress(put(med, 8.%eval(&decimal+1)))));
q1q3 = trim(left(compress(put(q1, 8.%eval(&decimal+1))))||', '||trim(left(compress(put(q3, 8.%eval(&decimal+1))))))
);
min1 = trim(left(compress(put(min, 8.%eval(&decimal+0))))||', '||trim(left(compress(put(max, 8.%eval(&decimal+0))))
));
run;

proc transpose data = xlab_&outnum. out=xlab_1_&outnum.;
id trtcd;
var n1 mean1 ci1 median1 q1q3 min1;
run;

data rep_&outnum.;
length _name_ _1 _2 /*_3*/ ord1 $100;
set xlab_1_&outnum.;
ord1=&outnum;
ordnum=input(ord1, best.);
if upcase(_name_)="N1" then do; _name_="n"; sord=0; end;
if upcase(_name_)="GEOMEAN" then do; _name_="Geometric LS Mean (CV%)"; sord=1; end;
if upcase(_name_)="GEOCI" then do; _name_="95% CI of Geometric Mean"; sord=2; end;

if upcase(_name_)="MEAN1" then do; _name_="Mean (SD)"; sord=6; end;
if upcase(_name_)="CI1" then do; _name_="95% CI of Mean"; sord=7; end;
if upcase(_name_)="MEDIAN1" then do; _name_="Median"; sord=3; end;
if upcase(_name_)="Q1Q3" then do; _name_="Q25, Q75"; sord=4; end;
if upcase(_name_)="MIN1" then do; _name_="Min, Max"; sord=5; end;
run;

data rep;
set rep rep_&outnum.;
run;

%mend;

%macro mainloop(flg=, outn=, where=);

proc sort data=adam.adsl out=trt;
by usubjid;
where &flg.="Y";
run;

data trt;
set trt;
if TRT01P="THSm2.2" then trtcd=1;
else if TRT01P="mCC" then trtcd=2;
else if TRT01P="SA" then trtcd=3;
run;

data advs;
set adam.adbx;
if trta in ("mCC" "THSm2.2" "SA") and aval>. and &flg.="Y" and paramcd="CYP2A6" and (&where.) and an103f1="Y" and an102
f1="Y" /*and dtype ne "LOCF"*/;
run;

data advs;
set advs;
if aval>. then logaval=log(aval);
run;

proc sort data=advs out=check(keep=paramn avisitn avisit param paramcd) nodupkey;
by paramn avisitn avisit;
run;

data trt_1;
set trt;
run;

data advs;
set advs;
if TRTP="THSm2.2" then trtcd=1;
else if TRTP="mCC" then trtcd=2;
else if TRTP="SA" then trtcd=3;
run;

data check;
set check;
ord=_n_;
run;

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%*cal_summary_pvalue(where=1, outnum=1, var=aval, in=adv, pflg=1);

data rep;
run;

data _null_;
  set check;
  call execute ('%cal_summary_pvalue(where=%str(avisitn='||avisitn||' and paramn='||paramn||' ), outnum='||ord||', var
=aval, in=adv);');
run;

data rep1;
set rep;
run;

data rep;
run;

data _null_;
  set check;
  if avisitn>100;
  call execute ('%cal_summary_pvalue1(where=%str(avisitn='||avisitn||' and paramn='||paramn||' ), outnum='||ord||', va
r=PCHG, in=adv);');
run;

data rep2;
set rep;
rename _1=_4 _2=_5 _3=_6;
run;

proc sort data=rep1;
by ordnum sord;
run;

proc sort data=rep2;
by ordnum sord;
run;

data frep;
merge rep1 rep2;
by ordnum sord;
run;

data frep;
set frep;
ord=ORDNUM;
run;

data frep;
set frep;

  %do i = 1 %to 100;
    if (&i-1)*2<ordnum<=&i*2 then pagen=&i;
  %end;

run;

data frep;
set frep;
space=" ";
run;

data frep&outn.;
length avisit $200;
merge frep(in=a) check;
by ord;
if a;
if avisit="Day 0" then avisit="Baseline";
if avisitn>.;
run;

proc sort data=trt_1 nodupkey;
by trtcd usubjid;
run;

proc freq data = trt_1 noprint;
  tables trtcd/ out= denom;
run;

%global trt1_&outn. trt2_&outn. trt3_&outn.;
data _null_;
  set denom end=eof;

  retain total 0;

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total = total+count;

if trtcd= 1 then do;
    call symput("trt1_&outn.", trim(left(put(count,8)))));
end;
if trtcd= 2 then do;
    call symput("trt2_&outn.", trim(left(put(count,8)))));
end;
if trtcd= 3 then do;
    call symput("trt3_&outn.", trim(left(put(count,8)))));
end;

run;

data smalln&outn.;
set frep&outn.;
if _name_="n";
run;

data smalln&outn.;
set smalln&outn.;
_name_="Missing, n(%)";
sord=0.1;
if _1 ne "" then _1=strip(put((&trt1_&outn.-input(_1, best.)), 8.0))||" ("||strip(put((&trt1_&outn.-input(_1, best.))*
100/&&trt1_&outn., 8.1))||")";
if _2 ne "" then _2=strip(put((&trt2_&outn.-input(_2, best.)), 8.0))||" ("||strip(put((&trt2_&outn.-input(_2, best.))*
100/&&trt2_&outn., 8.1))||")";
if _3 ne "" then _3=strip(put((&trt3_&outn.-input(_3, best.)), 8.0))||" ("||strip(put((&trt3_&outn.-input(_3, best.))*
100/&&trt3_&outn., 8.1))||")";

if _4 ne "" then _4=strip(put((&trt1_&outn.-input(_4, best.)), 8.0))||" ("||strip(put((&trt1_&outn.-input(_4, best.))*
100/&&trt1_&outn., 8.1))||")";
if _5 ne "" then _5=strip(put((&trt2_&outn.-input(_5, best.)), 8.0))||" ("||strip(put((&trt2_&outn.-input(_5, best.))*
100/&&trt2_&outn., 8.1))||")";
if _6 ne "" then _6=strip(put((&trt3_&outn.-input(_6, best.)), 8.0))||" ("||strip(put((&trt3_&outn.-input(_6, best.))*
100/&&trt3_&outn., 8.1))||")";

run;

data frep&outn.;
set frep&outn. smalln&outn.;
run;

data frep&outn.;
set frep&outn.;
if _1 in ("0 (0.0)" " ") and _2 in ("0 (0.0)" " ") and _4 in ("0 (0.0)" " ") and _5 in ("0 (0.0)" " ") and _6 in ("0
(0.0)" " ") and _3 in ("0 (0.0)" " ") and sord>0 then delete;
run;

data frep&outn.;
set frep&outn.;
if _1 in ("0 (0.0)") then _1="0";
if _2 in ("0 (0.0)") then _2="0";
if _3 in ("0 (0.0)") then _3="0";
if _4 in ("0 (0.0)") then _4="0";
if _5 in ("0 (0.0)") then _5="0";
if _6 in ("0 (0.0)") then _6="0";
run;

proc sort data=frep&outn.;
by pagen paramn avisitn avisit sord;
run;

%mend;

%mainloop(flg=PPROT1FL, outn=1, where=%str(avisitn in (100, 106)));

%mainloop(flg=PPROT4FL, outn=4, where=%str(avisitn in (100, 190)));

proc format;
value $visf
"DAY 0"="Baseline"
"DAY 1" ="Day 1"
"DAY 2" ="Day 2"
"DAY 3" ="Day 3"
"DAY 4" ="Day 4"
"DAY 5" ="Day 5"
"DAY 30"="Day 30"
"DAY 60"="Day 60"
"DAY 90"="Day 90"
;
run;

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data odata.&prgname.;
length avisit $200;
set frep1 (in=a) frep4 (in=b);
avisit=put(avisit, $visf.);

if a then group="PPROT1FL";
if b then group="PPROT4FL";
run;

data odata;
length avisit $200;
set frep1 (in=a) frep4 (in=b);
avisit=put(avisit, $visf.);

if a then group="PPROT1FL";
if b then group="PPROT4FL";
run;

data frep4;
set frep4;
avisit=put(avisit, $visf.);
pagen=2;
run;

data frep1;
set frep1 frep4;
run;

data frep1;
set frep1;
if avisit="DAY 0" then avisit="Baseline";
avisit=propcase(avisit);
run;

proc sort data=frep1;
by pagen;
run;

%global totalpage;

data _null_;
set frep1 end=eof;

if eof then do;
call symput('totalpage', trim(left(put(pagen,8)))));
end;

run;

proc format;
value grp
5    ="Parameter: CYP2A6 Activity (%)"
;
value grpf
5    ="Parameter: CYP2A6 Activity (%)"
run;

%**title(prgname1=&prgname.);

%trtrtfp(pgmname=&outname., pgmid=1, new=0, style=, bookmark=%lowcase(&outname.));

proc report data=frep1 headskip headline spacing=4 nowd split='~' style=[outputwidth=100%] style(header column)=[protec
tspecialchars=off];
column pagen paramn avisitn avisit sord _name_ ("~\brdrb\brdrs THSm2.2 (N=&trt1_1.)" _1 _4) space ("~\brdrb\brdrs mCC (N
=&trt2_1.)" _2 _5) space ("~\brdrb\brdrs SA (N=&trt3_1.)" _3 _6);
where pagen=1;
define pagen /order order=internal noprint;
define paramn /order order=internal noprint;
define avisitn /order order=internal noprint;
define avisit /order "Time point" flow style(column)=[cellwidth=10% just=l];
define sord /order order=internal noprint;

define _name_ /display "Statistic" flow style(column)=[cellwidth=17% just=l];
define _1 /display "Raw value" flow style(column)=[cellwidth=10% just=c];
define _4 /display "% Change(*)" flow style(column)=[cellwidth=10% just=c];
define space /display " " flow style(column)=[cellwidth=0.5% just=c];

define _2 /display "Raw value" flow style(column)=[cellwidth=10% just=c];
define _5 /display "% Change(*)" flow style(column)=[cellwidth=10% just=c];
define space /display " " flow style(column)=[cellwidth=0.5% just=c];

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define _3          /display "Raw value"      flow style(column)=[cellwidth=10% just=c];
define _6          /display "% Change(*)"     flow style(column)=[cellwidth=10% just=c];

/*
COMPUTE before paramn ;
LINE @1 paramn grp.;
ENDCOMP;
*/

compute before pagen;
line @1 "";
endcomp;

compute before _page_ /style=[fontweight=bold fontsize=3.75];
line @1 "&title1 &title2";
LINE @1 paramn grp.;

line @1 "Product Use Time Period: Period 1";
line @1 "^R/RTF'\brdrb\brdrs\brdrw30\brsp20\b ' ' ";
endcomp;

compute after _page_/style=[fontsize=1.75];
line @1 "Note: mCC = Menthol conventional cigarettes; SA = Smoking abstinence; THSm2.2 = Tobacco Heating System 2.2 Ment
hol.";
line @1 "Note: Periods defined as Period 1 ([Day 1 ̄ Day 6 confinement]), Period 2 ([Day 6 ambulatory ̄ Day 30 Visit]),
Period 3 ([Day 30 Visit ̄ Day 60 Visit]) and Period 4 ([Day 60 Visit ̄ Day 90 Visit]).";
line @1 "&APPENDIX.";
line @1 "Study ID:ZRHM-REXA-07-JP          Program: &fprgname..sas          Status: &repversion./&fdate.          Page: 1 o
f &totalpage";
endcomp;

break after pagen/page;

run;

proc report data=frep4 headskip headline spacing=4 nowd split='~' style=[outputwidth=100%] style(header column)=[protec
tspecialchars=off];
  column pagen paramn avisitn avisit sord _name_ (" \brdrb\brdrs THSm2.2 (N=&trt1_4.)" _1 _4) space (" \brdrb\brdrs mCC (N
=&trt2_4.)" _2 _5) space (" \brdrb\brdrs SA (N=&trt3_4.)" _3 _6);
  where pagen=2;
  define pagen /order order=internal noprint;
  define paramn /order order=internal noprint;
  define avisitn /order order=internal noprint;
  define avisit /order "Time point" flow style(column)=[cellwidth=10% just=1];
  define sord /order order=internal noprint;

  define _name_          /display "Statistic" flow style(column)=[cellwidth=17% just=1];
  define _1              /display "Raw value" flow style(column)=[cellwidth=10% just=c];
  define _4              /display "% Change(*)" flow style(column)=[cellwidth=10% just=c];
  define space           /display " " flow style(column)=[cellwidth=0.5% just=c];

  define _2              /display "Raw value" flow style(column)=[cellwidth=10% just=c];
  define _5              /display "% Change(*)" flow style(column)=[cellwidth=10% just=c];
  define space           /display " " flow style(column)=[cellwidth=0.5% just=c];

  define _3              /display "Raw value" flow style(column)=[cellwidth=10% just=c];
  define _6              /display "% Change(*)" flow style(column)=[cellwidth=10% just=c];

/*
COMPUTE before paramn ;
LINE @1 paramn grp.;
ENDCOMP;
*/

compute before pagen;
line @1 "";
endcomp;

compute before _page_ /style=[fontweight=bold fontsize=3.75];
line @1 "&title1 &title2";
LINE @1 paramn grp.;

line @1 "Product Use Time Period: Period 4";
line @1 "^R/RTF'\brdrb\brdrs\brdrw30\brsp20\b ' ' ";
endcomp;

compute after _page_/style=[fontsize=1.75];
line @1 "Note: mCC = Menthol conventional cigarettes; SA = Smoking abstinence; THSm2.2 = Tobacco Heating System 2.2 Ment
hol.";
line @1 "Note: Periods defined as Period 1 ([Day 1 ̄ Day 6 confinement]), Period 2 ([Day 6 ambulatory ̄ Day 30 Visit]),

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Period 3 ([Day 30 Visit  $\bar{\bar{}}$  Day 60 Visit]) and Period 4 ([Day 60 Visit  $\bar{\bar{}}$  Day 90 Visit]).";
line @1 "&APPENDIX.";
line @1 "Study ID:ZRHM-REXA-07-JP          Program: &fprgname..sas          Status: &repversion./&fdate.          Page: 2 o
f &totalpage";
endcomp;
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```
break after pagen/page;
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run;
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ods listing;
ods rtf close;
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