

```
/*=====
```

```
*Covance Study ID   : 000000106343
```

```
*Program Name       : t_cyp1a2_fas.sas
```

```
*Purpose            : Table 15.2.4.23.1(Descriptive Statistics of CYP2A6 ACTIVITY (%) - PP;
```

```
*Input Data         : adam.adsl, ADAM.adbx
```

```
*Output Data        :
```

```
*Macros Called       :
```

```
*Programmed by      : cvn_pshe
```

```
*Creation Date       : 2015-05-13
```

```
-----
```

```
Modification History
```

```
-----
```

```
Modified by         :
```

```
Modification Date    :
```

```
Modification Description:
```

```
-----*/
```

```
proc datasets lib=work kill memtype=data nolist;
```

```
run;
```

```
%m_printto;
```

```
options notes nosource;
```

```
options replace;
```

```
options notes source source2 nofullstimer validvarname=upcase missing=' ';
```

```
ods _all_ close;
```

```
ods listing;
```

```
*=====;
```

```
* START OF PROGRAM CODE ;
```

```
*=====;
```

```
%let tflno=T_15_02_04_23_01;
```

```
%let TFL_Part=%scan(&_SASPROGRAMFILE,-3,%str(/));
```

```
data _null_;
```

```
    tmp("&TFL_Part";
```

```
        if tmp not in ("dev" "qc") then call symput("TFL_Part", "prod");
```

```
        call symput('TFLpath', compress("&_SASPROGRAMFILE", ""));
```

```
            call
```

```
symput('TFLprg',reverse(scan(strip(reverse(compress("&_SASPROGRAMFILE", ""))),1,"/")));
```

```
run;
```

```
/*Macro to get N values from adam.adsl for column headers for each period per Mock*/
```

```
%macro trt(pfl= );
```

```
proc sql;
```

```
    %global trt1 trt2 trt3;
```

```
    select count(distinct usubjid) into: trt1 from adam.adsl(where=(trt01an = 4 and &pfl.));
```

```
    select count(distinct usubjid) into: trt2 from adam.adsl(where=(trt01an = 5 and &pfl.));
```

```
    select count(distinct usubjid) into: trt3 from adam.adsl(where=(trt01an = 3 and &pfl.));
```

```

quit;

%mend;

/*macro for general mean stats(n mean std median min max Q25 Q75 lclm uclm)for each period per
mock;*/

%macro mmeans(pfl=, prd=, class=, var=, out=);

/*get N values for column headers for each period*/

%trt(pfl=&pfl.);

/*Bring in data from ADBX for plasma cyp2a6 activity - PP Set for each period per Mock*/

data adbx1;

    set adam.adbx;

    where anl02fl='Y' and paramcd in ('CYP1A2') and &prd.;

    if          trtan=4 then trt=1;

    else if trtan=5 then trt=2;

    else if trtan=3 then trt=3;

run;

data adbx;

    set adbx1;

    if ablfl='Y' then avisit='Baseline';

run;

proc means data=adbx noprint nway;

    var &var.;

    class &class. trt;

```

```
output out=results02 n=n1 mean=mean1 std=sd1 median=median1 min=min1 max=max1 q1=q1  
q3=q3 lclm=lci1 uclm=uci1;
```

```
run;
```

```
/*get N for baseline(for calculate change volume of <missing, n(%>)*/*
```

```
data bs;
```

```
set results02;
```

```
if avisit="Baseline";
```

```
run;
```

```
data tot;
```

```
set bs;
```

```
call symput('trtb' || compress(put(trt,best.)), compress(put(n1,best.)));
```

```
run;
```

```
%put trtb1=&trtb1 trtb2=&trtb2 trtb3=&trtb3;
```

```
data results03;
```

```
set results02;
```

```
attrib meansd length=$20.
```

```
minmax length=$20.
```

```
n length=$20.
```

```
miss length=$20.
```

```
median length=$20.
```

```
quart aci length=$20.;
```

```
n = left(compress(put(n1,8.)));
```

```

*for <missing, n(%)>;

                                if trt=1 then do;

                                if &trt1.=n1 then

miss="";

                                else

miss=strip(put((&trt1.-n1), 8.)) || '(' || strip(put(((&trt1.-n1)*100)/&trt1., 8.1)) || ")";

                                end;

                                else if trt=2 then do;

                                if &trt2.=n1 then

miss="";

                                else

miss=strip(put((&trt2.-n1), 8.)) || '(' || strip(put(((&trt2.-n1)*100)/&trt2., 8.1)) || ")";

                                end;

                                else if trt=3 then do;

                                if &trt3.=n1

then miss="";

                                else

miss=strip(put((&trt3.-n1), 8.)) || '(' || strip(put(((&trt3.-n1)*100)/&trt3., 8.1)) || ")";

                                end;

                                IF NOT MISSING(MEDIAN1) THEN MEDIAN = LEFT(COMPRESS(PUT(ROUND(MEDIAN1,0.001),10.3)));

                                IF NOT MISSING(MEAN1) AND NOT MISSING(SD1) THEN meansd =

LEFT(COMPRESS(PUT(ROUND(MEAN1,0.001),10.3))) || "

(" || STRIP(PUT(0.0001*CEIL(SD1/0.0001),10.4)) || ")";

                                IF NOT MISSING(MIN1) AND NOT MISSING(MAX1) THEN minmax = strip(put(min1, 10.2)) || ",

" || strip(put(max1, 10.2));

                                IF NOT MISSING(Q1) AND NOT MISSING(Q3) THEN QUART =

LEFT(COMPRESS(PUT(ROUND(Q1,0.001),10.3))) || ', ' ||

LEFT(COMPRESS(PUT(ROUND(Q3,0.001),10.3)));;

                                IF NOT MISSING(LCI1) AND NOT MISSING(UCI1) THEN ACI =

STRIP(PUT(0.001*FLOOR(LCI1/0.001),10.3)) || ', ' || STRIP(PUT(0.001*CEIL(UCI1/0.001),10.3));

```

```

drop n1 mean1 sd1 median1 min1 max1 q1 q3 uci1 lci1 ;

run;

proc transpose data=results03 out=&out prefix=r name=varname;

    by &class.;

    var n miss meansd median minmax aci quart;

    id trt;

run;

data &out.;

    set &out.;

    length stat $200;

    if varname='N'          then do; statord=1; stat='n'; end;

    if varname='MISS'       then do; statord=2; stat='Missing, n(%)'; end;

    if varname='MEDIAN' then do; statord=5; stat='Median'; end;

    if varname='QUART'      then do; statord=6; stat='Q25, Q75'; end;

    if varname='MINMAX' then do; statord=7; stat='Min, Max'; end;

    if varname='MEANSD' then do; statord=8; stat='Mean (SD)'; end;

    if varname='ACI'        then do; statord=9; stat='95% CI of Mean'; end;

run;

%mend;

%mmeans(pfl=(PPROT1FL='Y'), prd=(PPROT1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day
5' 'Day 6/Discharge Confinement')), class=avisitn avisit atptn atpt, var=aval, out=out_p1);

%mmeans(pfl=(PPROT2FL='Y'), prd=(PPROT2FL='Y' and avisit in ('Day 30' 'Day 0')), class=avisitn avisit
atptn atpt, var=aval, out=out_p2);

```

```
%mmeans(pfl=(PPROT3FL='Y'), prd=(PPROT3FL='Y' and avisit in ('Day 60' 'Day 0')), class=avisitn avisit  
atptn atpt, var=aval, out=out_p3);
```

```
%mmeans(pfl=(PPROT4FL='Y'), prd=(PPROT4FL='Y' and avisit in ('Day 90' 'Day 0')), class=avisitn avisit  
atptn atpt, var=aval, out=out_p4);
```

```
%mmeans(pfl=(PPROT1FL='Y'), prd=(PPROT1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day  
5' 'Day 6/Discharge Confinement')), class=avisitn avisit atptn atpt, var=pchg, out=out_c1);
```

```
%mmeans(pfl=(PPROT2FL='Y'), prd=(PPROT2FL='Y' and avisit in ('Day 0' 'Day 30' )), class=avisitn avisit  
atptn atpt, var=pchg, out=out_c2);
```

```
%mmeans(pfl=(PPROT3FL='Y'), prd=(PPROT3FL='Y' and avisit in ('Day 0' 'Day 60' )), class=avisitn avisit  
atptn atpt, var=pchg, out=out_c3);
```

```
%mmeans(pfl=(PPROT4FL='Y'), prd=(PPROT4FL='Y' and avisit in ('Day 0' 'Day 90' )), class=avisitn avisit  
atptn atpt, var=pchg, out=out_c4);
```

```
/*macro for Geometric Mean per mock;*/
```

```
%macro mmeans(prd=, class=, var=, out=);
```

```
/*Bring in data from ADBX for cyp1a2 - PP Set for each period per Mock*/
```

```
data adbx1;
```

```
    set adam.adbx;
```

```
    where anl02fl='Y' and paramcd in ('CYP1A2') and &prd.;
```

```
    if          trtan=4 then trt=1;
```

```
    else if trtan=5 then trt=2;
```

```
    else if trtan=3 then trt=3;
```

```
run;
```

```
data adbx;
```

```
    set adbx1;
```

```
    if ablfl='Y' then avisit='Baseline';
```

```

        if aval ne 0 and aval ne . then logaval=log(aval);

run;

proc means data=adbx noprint nway;

    var &var.;

    class &class. trt;

        output out=results02 mean=mean std=std1 lclm=lci1 uclm=uci1;

run;

data results03;

    set results02;

    gmean1=exp(mean);

    gmean=left(compress(put(round(gmean1,0.001), 8.3)));

    if not missing(std1) then gcv=compress(put(0.0001*ceil((sqrt(exp(std1*std1)-
1)*100)/0.0001),8.4));

    glci=exp(lci1);

    guci=exp(uci1);

    if not missing(gcv) then gmeancv=left(trim(gmean)) || ' (' || left(trim(gcv)) || ')';

    else gmeancv=left(trim(gmean));

    if not missing(glci) and not missing(guci) then ci = strip(strip(put(0.001*floor(glci/0.001),8.3)) ||
', ' || strip(put(0.001*ceil(guci/0.001),8.3)));

run;

proc transpose data=results03 out=&out. prefix=r name=varname;

    by &class;

    var gmeancv ci;

```



```

id trt;

run;

data &out.;

    set &out.;

    length stat $200;

    if varname='GMEANCV' then do; statord=3; stat='Geometric Mean (CV%)'; end;

    if varname='CI' then do; statord=4; stat='95% CI of Geometric Mean'; end;

run;

%mend;

%mmeans(prd=(PPROT1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5' 'Day 6/Discharge
Confinement')), class=avisitn avisit atptn atpt, var=logaval, out=out_g1);

%mmeans(prd=(PPROT2FL='Y' and avisit in ('Day 30' 'Day 0')), class=avisitn avisit atptn atpt, var=logaval,
out=out_g2);

%mmeans(prd=(PPROT3FL='Y' and avisit in ('Day 60' 'Day 0')), class=avisitn avisit atptn atpt, var=logaval,
out=out_g3);

%mmeans(prd=(PPROT4FL='Y' and avisit in ('Day 90' 'Day 0')), class=avisitn avisit atptn atpt, var=logaval,
out=out_g4);

*check data for BLOQ;

data adbx_blq;

    set adbx;

    where AQLFL='Y';

    statval=aval;

```

```

type='abs';

output;

statsval=pchg;

type='pch';

output;

run;

/*macro to set together for each period ;*/

%macro mfinp(dsn=, dsng=, dsnc=, out=);

data ds1;

    set &dsn.(in=p) &dsng.(in=g) ;

run;

proc sort data=ds1 out=ds1;

    by avisitn avisit atptn statord;

run;

*delete baseline part for Change column;

data dsnc;

    set &dsnc.;

    if avisit="Baseline" then delete;

run;

proc sort data=dsnc out=ds2;

    by avisitn avisit atptn statord;

run;

```

```

data &out.;

    retain avisitn avisit atptn tp stat r1 c1 r2 c2 r3 c3 statord;

    merge ds1(in=a) ds2(in=c rename=(r1=c1 r2=c2 r3=c3) drop=ATPT VARNAME STAT);

    by avisitn avisit atptn statord;

    if a;

    if avisit="DAY 5" then tp=atpt;

    else tp=propcase(avisit);

    ***should delete <missing, n(%)> if no missing n;

    if stat="Missing, n(%)" and r1="" and r2="" and r3="" and c1="" and c2="" and c3="" then delete;

    keep avisitn avisit atptn statord tp stat r1 c1 r2 c2 r3 c3;

run;

%mend;

%mfinp(dsn=out_p1, dsng=out_g1, dsnc=out_c1, out=finalp1);
%mfinp(dsn=out_p2, dsng=out_g2, dsnc=out_c2, out=finalp2);
%mfinp(dsn=out_p3, dsng=out_g3, dsnc=out_c3, out=finalp3);
%mfinp(dsn=out_p4, dsng=out_g4, dsnc=out_c4, out=finalp4);

/*create final dataset per mock;*/

data final;

    set finalp1(in=p1) finalp4(in=p4) ;

```

```
if p1 then period="1";
```

```
if p4 then period="4";
```

```
if stat='Missing, n(%)' and avisit='Baseline' then do;
```

```
  if r1="" then r1='0';
```

```
    if r2="" then r2='0';
```

```
      if r3="" then r3='0';
```

```
end;
```

```
else if stat='Missing, n(%)' and avisit ^= 'Baseline' then do;
```

```
  if r1="" then r1='0';
```

```
    if r2="" then r2='0';
```

```
      if r3="" then r3='0';
```

```
  if c1="" then c1='0';
```

```
    if c2="" then c2='0';
```

```
      if c3="" then c3='0';
```

```
end;
```

```
if stat='BLOQ, n (%)' then do;
```

```
  if r3="" then r3='0';
```

```
    if r2="" then r2='0';
```

```
      if r1="" then r1='0';
```

```
end;
```

```
run;
```

```
/*output report data; */
```

```
proc sql noprint;
```

```
    create table tflds.&tflno as
```

```
        select period, avisitn, atptn, tp, statord, stat, r1 as thsm2_2, c1 as thsm2_2_chg, r2 as mCC, c2 as  
mCC_chg, r3 as SA, c3 as SA_chg
```

```
        from final
```

```
        order by period, avisitn, atptn, statord;
```

```
quit;
```

```
proc sort data=final;
```

```
    by period avisitn atptn statord;
```

```
run;
```

```
data paging;
```

```
    set final;
```

```
    by period avisitn atptn statord;
```

```
    if first.period or ln > 8 then ln=1; /*Amend to look presentable, and avoid page overflows*/
```

```
    else ln+1;
```

```
    if ln=1 then page+1;
```

```
    call symput("page",compress(put(page,best.)));
```

```
run;
```

```
*****,
```

```
*create output report ;
```

```
*****,
```

```
/*get N for each period for column header*/
```

```
proc sql;
```

```
select count(distinct usubjid) into: N1THS from adam.adsl(where=(trt01an = 4 and pprot1fl = "Y"));
```

```
select count(distinct usubjid) into: N1MCC from adam.adsl(where=(trt01an = 5 and pprot1fl = "Y"));
```

```
select count(distinct usubjid) into: N1SAA from adam.adsl(where=(trt01an = 3 and pprot1fl = "Y"));
```

```
select count(distinct usubjid) into: N2THS from adam.adsl(where=(trt01an = 4 and pprot2fl = "Y"));
```

```
select count(distinct usubjid) into: N2MCC from adam.adsl(where=(trt01an = 5 and pprot2fl = "Y"));
```

```
select count(distinct usubjid) into: N2SAA from adam.adsl(where=(trt01an = 3 and pprot2fl = "Y"));
```

```
select count(distinct usubjid) into: N3THS from adam.adsl(where=(trt01an = 4 and pprot3fl = "Y"));
```

```
select count(distinct usubjid) into: N3MCC from adam.adsl(where=(trt01an = 5 and pprot3fl = "Y"));
```

```
select count(distinct usubjid) into: N3SAA from adam.adsl(where=(trt01an = 3 and pprot3fl = "Y"));
```

```
select count(distinct usubjid) into: N4THS from adam.adsl(where=(trt01an = 4 and pprot4fl = "Y"));
```

```
select count(distinct usubjid) into: N4MCC from adam.adsl(where=(trt01an = 5 and pprot4fl = "Y"));
```

```
select count(distinct usubjid) into: N4SAA from adam.adsl(where=(trt01an = 3 and pprot4fl = "Y"));
```

```
quit;
```

```
options number nodate orientation=landscape missing=' ';
```

```
ods escapechar='$';
```

```
%let linetop = \brdrt\brdrs\brdrw30; * needs to be 1.5pt so calculated in twips (1/20 pt) ;
```

```
%let linebot = \brdrb\brdrs\brdrw30;
```

```
%macro outrtf(blankn=130, halfblink=N, dsn=);
```

```
ods path stdlib.t106343 (read) ;
```

```
ods results off;
```

```
ods rtf toc_data file="/cvn/projects/prj/data/000000106343/TFL/&TFL_Part./Tables/&tflno..rtf"  
style=t106343 startpage=yes headery=1440 footery=1440 ;
```

```
ods noproctitle;
```

```
%do i=1 %to &page;
```

```
title ;
```

```
footnote;
```

```
%let wd=0;
```

```
%let subpage=1;
```

```
%do j=1 %to &subpage;
```

```
%let maxpage=%eval(&page*&subpage);
```

```
%let npage=%eval(&subpage*&i+&j-&subpage);
```

```
data comp;
```

```
set paging end=eof;
```

```
where page=&i;
```

```

/* Amend title as needed */

_firtitl="Table 15.2.4.23.1 Descriptive Statistics of CYP1A2 Activity (%) PP Set";

_upcas=(length("Path: &TFLpath.")-
length(compress("Path:&TFLpath.",'ABCDEFGHIJKLMNOPQRSTUVWXYZ')))/2;

len=&blankn.-length("(page &npage of &maxpage)");

if eof then do;

call symput('_FSRTITL', trim(left(_firtitl)));

call symput('_blankn', compress(put(len,best.)));

end;

drop _firtitl _upcas len;

if _n_ =1 then
    do;

        call symput('title2', "Product Use Time Period: Period " || Period );

        *create trt1/trt2/trt3 N for each period for column header;

        if period="1" then do;

                                                    call
symput('trt1', strip(put(&N1THS., best.)));

                                                    call
symput('trt2', strip(put(&N1MCC., best.)));

                                                    call
symput('trt3', strip(put(&N1SAA., best.)));

                                                    end;

        else if period="2" then do;

                                                    call
symput('trt1', strip(put(&N2THS., best.)));

```



```

                                                    call
symput('trt2', strip(put(&N2MCC., best.)));

                                                    call
symput('trt3', strip(put(&N2SAA., best.)));

                                                    end;

                                else if period="3" then do;

                                                    call
symput('trt1', strip(put(&N3THS., best.)));

                                                    call
symput('trt2', strip(put(&N3MCC., best.)));

                                                    call
symput('trt3', strip(put(&N3SAA., best.)));

                                                    end;

                                else if period="4" then do;

                                                    call
symput('trt1', strip(put(&N4THS., best.)));

                                                    call
symput('trt2', strip(put(&N4MCC., best.)));

                                                    call
symput('trt3', strip(put(&N4SAA., best.)));

                                                    end;

                                end;

ods listing close;

```

- \* most set up in template others below;
- \* title arial 12pt bold with 12pt paragraph space below;
- \* all headers to be arial 11pt bold;
- \* data arial 10pt;

```

* headers to be central, text values left aligned and numeric centered around decimal point;

/* Update with your variables as needed */

proc report data = comp headline headskip nowd split = '$' %if &i=1 %then %do; contents=' '
%end; %else %do; contents=" %end;;;

column page avisitn atptn tp statord stat

%if &j=1 %then %do; ("THSm2.2 $(N=&trt1)&linebot" r1 c1) ("mCC$(N=&trt2)&linebot"
r2 c2)

("SA$(N=&trt3)&linebot" r3 c3) %end;;

define page      / order order = internal noprint;

define avisitn   / order order=internal noprint;

define atptn     / order order=internal noprint;

define tp        / group style={just=l cellwidth=1.8cm} style(header)={just=l} "Timepoint";

define statord   / order order = internal noprint;

define stat      / display style={just=left cellwidth=3cm} style(header)={just=center} "Statistic";

%if &j=1 %then %do;

define r1                /"Value" display style={just=c cellwidth=2.4cm}
style(header)={just=center} ;

define r2                /"Value" display style={just=c cellwidth=2.4cm}
style(header)={just=center} ;

define r3                /"Value" display style={just=c cellwidth=2.4cm}
style(header)={just=center};

define c1                /"% Change(*)" display style={JUST=c cellwidth=2.4cm}
style(header)={just=center};

define c2                /"% Change(*)" display style={just=c cellwidth=2.4cm}
style(header)={just=center};

define c3                /"% Change(*)" display style={just=c cellwidth=2.4cm}
style(header)={just=center};

```

```
%end;
```

```
break after page / page;
```

```
compute before page / style={protectspecialchars=off};;
```

```
line "&linetop";
```

```
endcomp;
```

```
compute before _page_ / style={just=left protectspecialchars=off};
```

```
line "\b\fs24\sa24&_FSRTITL." ; * \b = bold, \fs24 is font size 12pt, \sa24 is space after 12pt;
```

```
line " ";
```

```
line "&title2";
```

```
line "&linebot";
```

```
endcomp;
```

```
compute after _page_ / style={just=left protectspecialchars=off pretext="&linetop."};
```

```
line 'Note: mCC = Menthol conventional cigarettes; SA = Smoking abstinence; THSm2.2  
= Tobacco Heating System 2.2 Menthol.';
```

```
line "Note: Percentages are based on the number of subjects indicated in the column  
header (N).";
```

```
line "Note: * % change from baseline, where baseline is defined as the last assessment  
prior to first randomized product use in mCC / THS 2.2 Menthol arms or the";
```

```
line "last assessment prior to 10 AM on Day 1 in the SA arm.";
```

```
line ' ';
```

```
line "Appendix 15.3.4.1";
```

```
line "Study ID:ZRHM-REXA-08-US Program:&TFLprg Status: &status" &_blankn.*"\~\~"
"&sysdate" &_blankn.*"\~\~" "(Page &i of &page)";
```

```
endcomp;
```

```
run;
```

```
%end;
```

```
%end;
```

```
ods rtf close;
```

```
ods results on;
```

```
ods path sashelp.tmplmst (read);
```

```
%mend ;
```

```
%outrtf(blankn=36, halfblk=N);
```

```
ods listing close;
```

```
proc printto ; run;
```

```
%m_logchk;
```

```
*=====;
```

```
* END OF PROGRAM CODE ;
```

```
*=====;
```