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/*=====
*Covance Study ID      : 000000106343
*Program Name          : t_nnal_comp.sas
*Purpose               : Descriptive Statistics of Total NNAL in 24-hour Urine Collection - Compliant Population
                        Table 15.2.4.5.3
*Input Data            : adam.adsl, ADAM.adbx
*Output Data           : tflds.T_15_02_04_05_03
*Macros Called         : %m_printto, %m_logchk, %trt, fmmeans, %mmeans, %mfinp, %outrtf
*Programmed by         : L.Ma
*Creation Date         : 2015-05-18
*== Modification History =====
*Date      Initials  No. Reason;
*=====*/

options notes nosource;
proc datasets lib=work nolist memtype=data kill; quit;
options notes source source2 nofullstimer validvarname=upcase missing=' ';
ods _all_ close;
ods listing;

%m_printto;

*=====
*** Creating dataset for figure ***
*=====;
*Figure programmer asked the variable list: param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit lclm uclm mean;

%macro fmmeans(prd=, class=, var=, out=);
/*Bring in data from ADBX for Total NNAL in 24-hour Urine Collection - PP Set for each period per Mock*/
data adbx_f;
  set adam.adbx;
  where anl02fl='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
  AND &prd.;
run;

data adbx_f;
  set adbx_f;
  if ablfl='Y' then avisit='Baseline';
  if aval ne 0 and aval ne . then logaval=log(aval);
  if avisit='Day 0' then delete;
  if ablfl='Y' then do; avisit='Baseline'; avisitn=100; end;

  *according to the phone from Figure programmer on 16Jul2015, keep baseline record only for period 1 and make the missing value of ap
  uperc/apuper to period 1/1;
  if apuperc='' then apuperc='Period 1';
  if apuper=. then apuper=1;
run;

*proc mean need Geometric Mean part for figures;
proc means data=adbx_f noprint nway;
  var &var.;
  class &class.;
  output out=rs_f mean=mean1 lclm=lci1 uclm=uci1;
run;

data &out.;
  set rs_f;
  gmean1=exp(mean1);
  mean=round(gmean1,0.01);
  glci=exp(lci1);
  guci=exp(uci1);
  if not missing(glci) then lclm=0.01*floor(glci/0.01);
  if not missing(guci) then uclm=0.01*ceil(guci/0.01);

  keep param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit lclm uclm mean;
run;
%mend fmmeans;

%fmmeans(prd=(COMPP1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5')), class=param paramn paramcd avalu trtpn
trtp apuper apuperc avisitn avisit, var=logaval, out=out_p1_f);
%fmmeans(prd=(COMPP2FL='Y' and (avisit = 'Day 30')), class=param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit, var=l
ogaval, out=out_p2_f);
%fmmeans(prd=(COMPP3FL='Y' and (avisit = 'Day 60')), class=param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit, var=l
ogaval, out=out_p3_f);
%fmmeans(prd=(COMPP4FL='Y' and (avisit = 'Day 90')), class=param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit, var=l
ogaval, out=out_p4_f);

data rs_f;
  set out_p1_f

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    out_p2_f
    out_p3_f
    out_p4_f;

keep param paramn paramcd avalu trtpn trtp apuper apuperc avisitn avisit lclm uclm mean;
run;

proc sort data=rs_f;
    by paramn trtpn;
run;

/*output data for figure; */
data tflds.T_15_02_04_05_03_F(keep=param paramn paramcd avalu trtpn trtp apuperc avisitn avisit lclm uclm mean);
    set rs_f;
run;

*****
*** for Table 15.2.4.5.3 ***
*****;

/*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=(trt01pn = 4 and &pfl.));
    select count(distinct usubjid) into: trt2 from adam.adsl(where=(trt01pn = 5 and &pfl.));
    select count(distinct usubjid) into: trt3 from adam.adsl(where=(trt01pn = 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 Total NNAL in 24-hour Urine Collection - Compliant Population for each period per Mock*/
data adbx1;
    set adam.adbx;
    where an102f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
    AND &prd.;
    if trtpn=4 then trt=1;
    else if trtpn=5 then trt=2;
    else if trtpn=3 then trt=3;
run;

data adbx;
    set adbx1;
    if ablfl='Y' then avisit='Baseline';
    if avisit='Day 0' then delete;
    if ablfl='Y' then do; avisit='Baseline'; avisitn=100; end;
run;

proc means data=adbx noprint nway;
    var &var.;
    class &class. trt;
    output out=results02 n=n1 mean=mean1 std=std1 median=median1 min=min1 max=max1 q1=q1 q3=q3 lclm=lci1 uclm=uci1;
run;

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)) || "%";

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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(median1,0.01),8.2)));
if not missing(mean1) and not missing(std1) then meansd = left(compress(put(round(mean1,0.01),8.2)) || ' (' || left(compress(p
ut(0.001*ceil(std1/0.001),8.3)) || ')');
if not missing(min1) and not missing(max1) then minmax = left(compress(put(min1,8.1)) || ', ' || left(compress(put(max1,8.1))
);
if not missing(lci1) and not missing(uci1) then aci = strip(put(0.01*floor(lci1/0.01),8.2)) || ', ' || strip(put(0.01*ceil(uci1/
0.01),8.2));
if not missing(q1) and not missing(q3) then quart = strip(strip(put(round(q1, 0.01),8.2)) || ', ' || strip(put(round(q3, 0.01),8.2
)));
drop n1 mean1 std1 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 upcase(varname)='N' then do; statord=1; stat='n'; end;
if upcase(varname)='MISS' then do; statord=2; stat='Missing, n (%)'; end;
if upcase(varname)='MEDIAN' then do; statord=7; stat='Median'; end;
if upcase(varname)='QUART' then do; statord=8; stat='Q25, Q75'; end;
if upcase(varname)='MINMAX' then do; statord=9; stat='Min, Max'; end;
if upcase(varname)='MEANSD' then do; statord=10; stat='Mean (SD)'; end;
if upcase(varname)='ACI' then do; statord=11; stat='95% CI of Mean'; end;run;
%mend;

%mmeans(pf1=(COMPP1FL='Y'), prd=(COMPP1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5')), class=PARAMCD PARAM
avisitn avisit, var=aval, out=out_p1);
%mmeans(pf1=(COMPP2FL='Y'), prd=(COMPP2FL='Y' and (ablfl='Y' or avisit ='Day 30')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_p2);
%mmeans(pf1=(COMPP3FL='Y'), prd=(COMPP3FL='Y' and (ablfl='Y' or avisit ='Day 60')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_p3);
%mmeans(pf1=(COMPP4FL='Y'), prd=(COMPP4FL='Y' and (ablfl='Y' or avisit ='Day 90')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_p4);

%mmeans(pf1=(COMPP1FL='Y'), prd=(COMPP1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5')), class=PARAMCD PARAM
avisitn avisit, var=pchg, out=out_c1);
%mmeans(pf1=(COMPP2FL='Y'), prd=(COMPP2FL='Y' and (ablfl='Y' or avisit ='Day 30')), class=PARAMCD PARAM avisitn avisit, var=pchg, ou
t=out_c2);
%mmeans(pf1=(COMPP3FL='Y'), prd=(COMPP3FL='Y' and (ablfl='Y' or avisit ='Day 60')), class=PARAMCD PARAM avisitn avisit, var=pchg, ou
t=out_c3);
%mmeans(pf1=(COMPP4FL='Y'), prd=(COMPP4FL='Y' and (ablfl='Y' or avisit ='Day 90')), class=PARAMCD PARAM avisitn avisit, var=pchg, ou
t=out_c4);

/*macro for Geometric Mean per mock;*/
%macro mmeans(prd=, class=, var=, out=);
/*Bring in data from ADBX for Total NNAL in 24-hour Urine Collection - Compliant Population - PP Set for each period per Mock*/
data adbx1;
set adam.adbx;
where anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
AND &prd.;
if trtpn=4 then trt=1;
else if trtpn=5 then trt=2;
else if trtpn=3 then trt=3;
run;

data adbx;
set adbx1;
if ablfl='Y' then avisit='Baseline';
if avisit='Day 0' then delete;
if ablfl='Y' then do; avisit='Baseline'; avisitn=100; end;

logaval=log(aval);
run;

proc means data=adbx noprint nway;
var &var.;
class &class. trt;

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

data results03;
    set results02;
    gmean1=exp(mean);
    gmean=left(compress(put(round(gmean1,0.01), 8.2)));
    gcv=compress(put(0.001*ceil((sqrt(exp(std1*std1)-1)*100)/0.001),8.3));
    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(0.01*floor(glci/0.01),8.2)) || ', ' || strip(put(0.01*ceil(guci/0.01),8.2))));
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 upcase(varname)='GMEANCV' then do; statord=5; stat='Geometric Mean (CV%)'; end;
    if upcase(varname)='CI' then do; statord=6; stat='95% CI of Geometric Mean'; end;
run;

%mend;

%mmeans(prd=(COMPP1FL='Y' and avisitn in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5')), class=PARAMCD PARAM avisitn avisit, var=logaval, out=out_g1);
%mmeans(prd=(COMPP2FL='Y' and (ablfl='Y' or avisit = 'Day 30')), class=PARAMCD PARAM avisitn avisit, var=logaval, out=out_g2);
%mmeans(prd=(COMPP3FL='Y' and (ablfl='Y' or avisit = 'Day 60')), class=PARAMCD PARAM avisitn avisit, var=logaval, out=out_g3);
%mmeans(prd=(COMPP4FL='Y' and (ablfl='Y' or avisit = 'Day 90')), class=PARAMCD PARAM avisitn avisit, var=logaval, out=out_g4);

*check data for BLOQ/ALQ ;
*per Jh email at Wed 7/1/2015 9:34 AM ---- we only need to present BLOQ as a line item if there are BLOQ values for a given parameter/timepoint;
proc freq data=adam.adbx(where=(anl02fl='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE' AND AQLFL='Y' ));
    table AVALC;
run;

/*macro for BLOQ n(%) row for each period.*/
%macro mmeans(pfl=, prd=, class=, var=, out=);
/*get N values for column headers for each period*/
%trt(pfl=&pfl.);

/*Bring in data from ADBX with AQLFL=Y and ANL02FL=Y for Total NNAL in 24-hour Urine Collection - PP Set by Cigarette Consumption for each period per Mock*/
data adbx1;
    set adam.adbx;
    where anl02fl='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE' AND AQLFL='Y' AND &prd.;
    if trtpn=4 then trt=1;
    else if trtpn=5 then trt=2;
    else if trtpn=3 then trt=3;
run;

data adbx;
    set adbx1;
    if ablfl='Y' then avisit='Baseline';
    if avisit='Day 0' then delete;
    if ablfl='Y' then do; avisit='Baseline'; avisitn=100; end;
run;

proc means data=adbx noprint nway;
    var &var.;
    class &class. trt;
    output out=rs01 n=n1;
run;

*** 8-4-2015 John email: base the percentages for the BLOQ, n (%) rows in all tables on the n used in the summary statistics rather than the N in the column header.***;
data adbx01;

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set adam.adbx;
where anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
AND &prd.;
if trtan=4 then trt=1;
else if trtan=5 then trt=2;
else if trtan=3 then trt=3;
run;

data adbx00;
set adbx01;
if ablfl='Y' then avisit='Baseline';
if avisit='Day 0' then delete;
if ablfl='Y' then do; avisit='Baseline'; avisitn=100; end;
run;

proc means data=adbx00 noprint nway;
var &var.;
class &class. trt;
output out=rs00(drop=_type_ _freq_) n=_n1;
run;

data rs02;
merge rs01 rs00(in=a);
by PARAMCD PARAM avisitn avisit trt;
if a;
run;

data rs03;
set rs02;
attrib bloq length=$20. ;

if n1=. then bloq="";
else bloq=strip(put(n1, 8.)) || ' (' || strip(put((n1*100)/_n1, 8.1)) || ")";
run;

proc transpose data=rs03 out=rs04 prefix=r name=varname;
by PARAMCD PARAM avisitn avisit;
var bloq ;
id trt;
run;

data &out.;
set rs04;
length stat $200;
if upcase(varname)='BLOQ' then do; statord=3; stat='BLOQ, n (%)'; end;

*delete if BLOQ are missing for all the trt;
if r1="" and r2="" and r3="" then delete;

*format missing cell to 0 per John email on 8-5-2015;
if r1="" then r1="0";
if r2="" then r2="0";
if r3="" then r3="0";
run;
%mend mmeans;

%mmeans(pf1=(COMPP1FL='Y'), prd=(COMPP1FL='Y' and avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5')), class=PARAMCD PARAM
avisitn avisit, var=aval, out=out_bq1);
%mmeans(pf1=(COMPP2FL='Y'), prd=(COMPP2FL='Y' and (ablfl='Y' or avisit = 'Day 30')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_bq2);
%mmeans(pf1=(COMPP3FL='Y'), prd=(COMPP3FL='Y' and (ablfl='Y' or avisit = 'Day 60')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_bq3);
%mmeans(pf1=(COMPP4FL='Y'), prd=(COMPP4FL='Y' and (ablfl='Y' or avisit = 'Day 90')), class=PARAMCD PARAM avisitn avisit, var=aval, ou
t=out_bq4);

/*macro to set together for each period */
%macro mfinp(dsn=, dsnbq=, dsng=, dsnc=, out=);
data dsn1;
set &dsn.(in=p) &dsnbq.(in=bq) &dsng.(in=g) ;
run;

proc sort data=dsn1 out=ds1;
by paramcd param avisitn avisit statord stat varname;
run;

data dsnc;
set &dsnc.;

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*delete change part for paramcd=UNNAL24U per mock;
  if paramcd="UNNAL24U" then do; r1=""; r2=""; r3=""; end;
*delete baseline part for Change column per mock;
  if avisit="Baseline" then delete;
run;

proc sort data=dsnc out=ds2;
  by paramcd param avisitn avisit statord stat varname;
run;

data &out.;
  retain paramcd param avisitn avisit tp stat r1 c1 r2 c2 r3 c3 statord;
  merge ds1(in=a) ds2(in=c rename=(r1=c1 r2=c2 r3=c3));
  by paramcd param avisitn avisit statord stat varname;
  if a;
  if avisit="Baseline" then tp=avisit;
  else tp=propcase(avisit);

  ***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;

  *** 8/5/2015 email from John:
  presentation of Missing and BLOQ rows in all tables where those rows exist. If in a given row a treatment group has no
  such values (but at least 1 other treatment group does) then present 0 as applicable. ***;
  if stat="Missing, n (%)" then do;
    if r1="" then r1="0";
    if r2="" then r2="0";
    if r3="" then r3="0";
  end;

  if stat="Missing, n (%)" and paramcd ne "UNNAL24U" and avisit ne 'Baseline' then do;
    if c1="" then c1="0";
    if c2="" then c2="0";
    if c3="" then c3="0";
  end;

  keep paramcd param avisitn avisit /*atptn*/ statord tp stat r1 c1 r2 c2 r3 c3;
run;
%mend;

%mfinp(dsn=out_p1, dsnbq=out_bq1, dsng=out_g1, dsnc=out_c1, out=finalp1);
%mfinp(dsn=out_p2, dsnbq=out_bq2, dsng=out_g2, dsnc=out_c2, out=finalp2);
%mfinp(dsn=out_p3, dsnbq=out_bq3, dsng=out_g3, dsnc=out_c3, out=finalp3);
%mfinp(dsn=out_p4, dsnbq=out_bq4, dsng=out_g4, dsnc=out_c4, out=finalp4);

/*create final dataset per mock;*/
data final;
  set finalp1(in=p1) finalp2(in=p2) finalp3(in=p3) finalp4(in=p4) ;

  if p1 then period="1";
  if p2 then period="2";
  if p3 then period="3";
  if p4 then period="4";

  array rr{6} r1 r2 r3 r4 r5 r6;
  do i=1 to 6;
    if rr{i}="0(0.0)" then rr{i}='';
  end;
run;

*****;
*create new page for each timepoint for report ;
*****;
proc sql;
  create table page as
  select distinct paramcd, period, avisitn, tp
  from final
  order by paramcd desc, period, avisitn, tp;
quit;

data page1;
  set page;
  by descending paramcd period avisitn tp;
  if _n_ = 0 then page = 0;
  page + 1;
run;

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proc sql;
  create table final_page as
  select distinct a.*, b.page
  from final as a
  left join page1 as b
  on a.paramcd=b.paramcd and a.avisitn=b.avisitn and a.tp = b.tp and a.period=b.period
  order by paramcd desc, period, page, avisitn, avisit, statord;
quit;

data final_page(rename=(r1=THSm c1=THSm_chg r2=mCC c2=mCC_chg r3=SA c3=SA_chg));
  set final_page end=last;
  by descending paramcd period page avisitn statord;
  if last then call symputx("page", page);
run;

/*output report data; */
%let tflno=T_15_02_04_05_03;
data tflds.&tflno(keep=paramcd param avisitn avisit tp stat THSm mCC SA THSm_chg mCC_chg SA_chg statord period page);
  set final_page;
run;

*****;
*create output report ;
*****;

/*get N for each period for column header*/
proc sql;

select count(distinct usubjid) into: N1THS from adam.adsl(where=(trt01pn = 4 and COMPP1FL = "Y"));
select count(distinct usubjid) into: N1MCC from adam.adsl(where=(trt01pn = 5 and COMPP1FL = "Y"));
select count(distinct usubjid) into: N1SAA from adam.adsl(where=(trt01pn = 3 and COMPP1FL = "Y"));

select count(distinct usubjid) into: N2THS from adam.adsl(where=(trt01pn = 4 and COMPP2FL = "Y"));
select count(distinct usubjid) into: N2MCC from adam.adsl(where=(trt01pn = 5 and COMPP2FL = "Y"));
select count(distinct usubjid) into: N2SAA from adam.adsl(where=(trt01pn = 3 and COMPP2FL = "Y"));

select count(distinct usubjid) into: N3THS from adam.adsl(where=(trt01pn = 4 and COMPP3FL = "Y"));
select count(distinct usubjid) into: N3MCC from adam.adsl(where=(trt01pn = 5 and COMPP3FL = "Y"));
select count(distinct usubjid) into: N3SAA from adam.adsl(where=(trt01pn = 3 and COMPP3FL = "Y"));

select count(distinct usubjid) into: N4THS from adam.adsl(where=(trt01pn = 4 and COMPP4FL = "Y"));
select count(distinct usubjid) into: N4MCC from adam.adsl(where=(trt01pn = 5 and COMPP4FL = "Y"));
select count(distinct usubjid) into: N4SAA from adam.adsl(where=(trt01pn = 3 and COMPP4FL = "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, halfblnk=N, dsn=);

%let title1 = %str(Table 15.2.4.5.3 Descriptive Statistics of Total NNAL in 24-hour Urine Collection - Compliant Population);

%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;

%if &halfblnk=N %then %let halfblnk=;
%else %if &halfblnk=Y %then %let halfblnk=-;

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=14
40 footery=1440 ;
ods noproctitle;
%do i=1 %to &page;
  title ;

```

```

footnote;
%let wd=0;
ods proclabel = ' ';

data comp;
    set final_page end=eof;
    where page=&i;
    length sp $1;

    if _n_ =1 then
    do;
        call symput('title3', "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;

sp='';
    /* Amend title as needed */
    _firtitl="&title1.";
    _upcas=(length("Path: &TFLpath.")-length(compress("Path:&TFLpath.",'ABCDEFGHIJKLMNOPQRSTUVWXYZ')))/2;
    len=&blankn.-length("(page &i of &page)");

if eof then do;
    call symput('_FSRTITL', trim(left(_firtitl)));
    call symput('_blankn', compress(put(len,best.)));
    call symput('param', strip(param));

    *flag for paramcd='UNNAL24U' part on rtf report;
    if paramcd='UNNAL24U' then call symput('fl', 'Y');
    else call symput('fl', 'N') ;
    end;
    drop _firtitl _upcas len;
run;

ods listing close;

proc report data = comp headline headskip nowd split = '$' %if &i=1 %then %do; contents=' ' %end; %else %do; contents='' %end;;
%if &fl.=N %then %do;
    column tp stat ("THSm2.2$(N=&trt1)&linebot" THSm THSm_chg )
                ("mCC$(N=&trt2)&linebot" mCC mCC_chg)
                ("SA$(N=&trt3)&linebot" SA SA_chg);
    define tp          /"Timepoint" order order=internal style={just=left cellwidth=0.9cm} style(header)={just=left} ;
    define stat        /"Statistic" display style={just=left cellwidth=1.9cm} style(header)={just=left} ;
    define THSm        /"Value" display style={just=c cellwidth=1.2cm} style(header)={just=center} ;
    define mCC         /"Value" display style={just=c cellwidth=1.2cm} style(header)={just=center} ;
    define SA          /"Value" display style={just=c cellwidth=1.2cm} style(header)={just=center};
    define THSm_chg    /"% Change(*)" display style={JUST=c cellwidth=1.15cm} style(header)={just=center};
    define mCC_chg     /"% Change(*)" display style={just=c cellwidth=1.15cm} style(header)={just=center};
    define SA_chg      /"% Change(*)" display style={just=c cellwidth=1.15cm} style(header)={just=center};
%end;
%else %do;
    column tp stat ("THSm2.2$(N=&trt1)&linebot" THSm ) sp
                ("mCC$(N=&trt2)&linebot" mCC ) sp
                ("SA$(N=&trt3)&linebot" SA );
    define tp          /"Timepoint" order order=internal style={just=left cellwidth=2cm} style(header)={just=left} ;
    define stat        /"Statistic" display style={just=left cellwidth=3cm} style(header)={just=left} ;
    define THSm        /"Value" display style={just=c cellwidth=2.4cm} style(header)={just=center} ;
    define mCC         /"Value" display style={just=c cellwidth=2.4cm} style(header)={just=center} ;
    define SA          /"Value" display style={just=c cellwidth=2.4cm} style(header)={just=center};

```



```

define sp /"" display style={just=c cellwidth=0.001cm} style(header)={just=center};
%end;

compute after tp;
  line " ";
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 "Parameter (units): &param";
  line "\b\fs24\sa24&title3." ;
  line "&linebot";
endcomp;

%let line3=%NRBQUOTE(Note: 'Missing' percentages are based on the number of subjects indicated in the column header (N), while
'BLOQ' percentages are based on the number of subjects being summarized (n).);
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: * % 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 last assessment prior to 10AM on Day 1 in the SA arm.';
  line "&line3.";
  line ' ';
  line 'Appendix 15.3.3.1';
  line "Study ID: ZRHM-REXA-08-US      Program: &TFLprg      Status: &status" &_blankn.*"\~\~" "&sysdate" &_blankn.*"\~\~" "(Page &i
of &page)";
  endcomp;
run;
%end;
ods rtf close;
ods results on;
ods path sashelp.tmplmst (read);

%mend outrtf;

%outrtf(blankn=36, halfblnk=N);
ods listing;

%m_logchk;

/***** END OF FILE t_nnal_comp.sas *****/

```