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/*=====
*Covance Study ID      : 000000106343
*Program Name          : t_nnal_fas.sas
*Purpose               : Descriptive Statistics of Total NNAL in 24-hour Urine Collection - FAS
      Table 15.2.4.5.2
*Input Data            : adam.adsl, ADAM.adbx
*Output Data           : tflds.T_15_02_04_05_02_F, tflds.T_15_02_04_05_02
*Macros Called         : %m_printto, %m_logchk, %mmeans, %outrtf
*Programmed by        : L.Ma
*Creation Date         : 2015-05-15
*== 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 avisitn avisit lclm uclm mean;

data adbx1_f;
  set adam.adbx;
  where anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
  AND (fasf1='Y');
run;

data adbx_f;
  set adbx1_f;
  if ablf1='Y' then do; avisit='Baseline'; avisitn=100; end;
  if avisit not in ('Baseline' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5' 'Day 30' 'Day 60' 'Day 90') then delete;

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

*proc mean need Geometric Mean part for figures;
proc means data=adbx_f noprint nway;
  var logaval;
  class param paramn paramcd avalu trtpn trtp avisitn avisit ;
  output out=rs_f mean=mean1 lclm=lci1 uclm=uci1;
run;

data rs_f;
  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 avisitn avisit lclm uclm mean;
run;

/*output data for figure; */
data tflds.T_15_02_04_05_02_F(keep=param paramn paramcd avalu trtpn trtp avisitn avisit lclm uclm mean);
  set rs_f;
run;

*=====
*** for Table 15.2.4.5.2 ***
*=====;
/*Use ADSL to get N values for column headers*/
data adsl;
  set adam.adsl(where=(fasf1='Y'));
  if trt01pn=4 then trt=1;
  else if trt01pn=5 then trt=2;
  else if trt01pn=3 then trt=3;
run;

proc freq data=adsl noprint;
  table trt/ out =tot(drop=percent rename=(count=total));
run;

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data tot2;
  set tot;
  call symput('trt' || compress(put(trt,best.)), compress(put(total, best.)));
run;

%put THS=&trt1 mCC=&trt2 SA=&trt3;

/*Bring in data from ADBX for Total NNAL in 24-hour Urine Collection - fas Set per Mock*/
data adbx1;
  set adam.adbx;
  where anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNALCRE' 'UNNAL24U') AND LBSPEC = 'URINE'
  AND (fasf1='Y');
  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 do; avisit='Baseline'; avisitn=100; end;
  if avisit not in ('Baseline' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5' 'Day 30' 'Day 60' 'Day 90') then delete;
  if aval ne 0 and aval ne . then logaval=log(aval);
run;

*****;
* macro for general mean stats(n mean std median min max Q25 Q75 lclm uclm) per mock ;
*****;
%macro mmeans(dsn=, class=, var=, out=);
proc means data=&dsn. 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)) || ")";
  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(put(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;

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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)='MEANS' then do; statord=10; stat='Mean (SD)'; end;
if upcase(varname)='CI' then do; statord=11; stat='95% CI of Mean'; end;run;

%mend mmeans;

%mmeans(dsn=adbx, class=PARAMCD PARAM avisitn avisit, var=aval, out=out1);
%mmeans(dsn=adbx, class=PARAMCD PARAM avisitn avisit, var=pchg, out=out2);

*****;
* macro for Geometric Mean per mock ;
*****;
%macro mmeans(dsn=, class=, var=, out=);
proc means data=&dsn. 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(gmean1,0.01), 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(guc
i/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;

%mmeans(dsn=adbx, class=PARAMCD PARAM avisitn avisit, var=logaval, out=out3);

*check data for BLOQ/ALOQ ;
*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 paramete
r/timepoint;
proc freq data=adam.adbx(where=(anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNLCRE' 'UNNAL24U') AND LBSPEC = 'URINE' A
ND AQLFL='Y' ));
table AVALC;
run;

/*BLOQ n(%) row;*/
/*Bring in data from ADBX where AQLFL=Y and ANL02FL=Y for Total NNAL in 24-hour Urine Collection - PP Set by Cigarette Consumption f
or each period per Mock*/
data adbx_bq;
set adam.adbx;
where anl02f1='Y' AND PARCAT1 = 'BIOMARKERS' AND PARAMCD in ('UNNLCRE' 'UNNAL24U') AND LBSPEC = 'URINE' AND AQLFL='Y'
AND (fasf1='Y');
if trtpn=4 then trt=1;
else if trtpn=5 then trt=2;
else if trtpn=3 then trt=3;
run;

data adbx_bq1;

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set adbx_bq;
if ab1fl='Y' then do; avisit='Baseline'; avisitn=100; end;
if avisit not in ('Baseline' 'Day 1' 'Day 2' 'Day 3' 'Day 4' 'Day 5' 'Day 30' 'Day 60' 'Day 90') then delete;
run;

proc means data=adbx_bq1 noprint nway;
var aval;
class PARAMCD PARAM avisitn avisit 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.***;
proc means data=adbx noprint nway;
var aval;
class PARAMCD PARAM avisitn avisit 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_bq;
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;

*****;
* set together ;
*****;
data final1;
set out1 out_bq out3;
run;

proc sort data=final1 out=final2;
by PARAMCD PARAM avisitn avisit statord stat varname;
run;

data out2d;
set out2;
*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=out2d out=out2_s;
by PARAMCD PARAM avisitn avisit statord stat varname;
run;

data final;
retain PARAMCD PARAM avisitn avisit statord tp stat r1 c1 r2 c2 r3 c3 statord;

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merge final2(in=a) out2_s(in=b rename=(r1=c1 r2=c2 r3=c3));
by PARAMCD PARAM avisitn avisit statord stat varname;
if a;

tp=avisit;

***delete <missing, n(%)>/<BLOQ, n (%)> if no missing/BLOQ n data for the row;
if stat="Missing, n (%)" and r1="" and r2="" and r3="" and c1="" and c2="" and c3="" then delete;

array rr{6} r1 r2 r3 c1 c2 c3;
do i=1 to 6;
  if rr{i}="0(0.0)" then rr{i}='';
end;

*** 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 statord tp stat r1 c1 r2 c2 r3 c3;
run;

*****;
*create new page for each avisit for report ;
*****;
proc sql;
  create table page as
  select distinct PARAMCD, PARAM, avisitn, tp
  from final
  order by PARAMCD desc, PARAM, avisitn, tp;
quit;

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

proc sql;
  create table final_page as
  select distinct a.*, b.page
  from final as a
  left join page1 as b
  on a.tp = b.tp and a.paramcd=b.paramcd and a.param=b.param
  order by PARAMCD desc, PARAM, 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 page avisitn statord;
  if last then call symputx("page", page);
run;

/*output report data; */
%let tfldno=T_15_02_04_05_02;
data tflds.&tfldno(keep=paramcd param avisitn avisit tp stat THSm mCC SA THSm_chg mCC_chg SA_chg statord page);
  set final_page;
run;

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

options number nodate orientation=landscape missing=' ';
ods escapechar='$';

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%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 15.2.4.5.2 Descriptive Statistics of Total NNAL in 24-hour Urine Collection - FAS);

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

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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 "&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_fas.sas *****/

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