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Covance Study ID : COV-000000106343

Program Name : d\_2adxt.sas

Purpose : Program to create ADXT dataset

Author : cvn\_pshe

Date of Creation : 1MAY2015

Input Data : ADAM.ADSL, SDTM.XT, DTM.SUPPXT,

Output Data : ADAM.ADXT

Macros Called : m\_printto,%m\_totper, m\_perall, m\_logchk, m\_attrib\_adam

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Modification History  
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Modified by :

Modification Date :

Modification Description:

-----\*/

options notes nosource;

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

\* macro to save output and log to appropriate areas ;

%m\_printto;

options notes source source2 nofullstimer validvarname=upcase missing=' ' mprint symbolgen;

ods \_all\_ close;

ods listing;

```

*=====;

* START OF PROGRAM CODE                                ;

*=====;

libname adam "&base2/datasets/adam/cleaned_adam";

libname sdtm "/cvn/projects/prj/data/000000106343/datasets/sdtm/sdtmx";


*****;,

* bring in ADSL ;

*****;,

data adsl;

    set adam.adsl;

    keep studyid usubjid subjid: siteid age sex: race height weightbl bmi ucpdgr1 ucpdgr1n enrfl scrffl
    complfl SAFBFL SAFAFL fasfl pprot1fl pprot2fl pprot3fl pprot4fl randfl trt: dthfl exfl enfl exnotrfl;

run;


* get xt and suppxt data;

data xt;

    length xttestcd $8 xttest $80;

    set sdtm.xt;

run;


proc sort data = xt;

    by usubjid xtrefid;

run;

```

```
DATA SUPPXT;  
  
  SET SDTM.SUPPXT;  
  
  where QNAM in ('FILESTAT' 'KIT_NUM' 'VIAL_NUM' 'FILTNUM' 'SODENUM' 'SOSHNUM');  
  
RUN;
```

```
data _null_;  
  
  set SUPPXT;  
  
  if idvar not in("XTREFID" "XTSEQ") then put "WAR" "NING: Unexpected value " qnam= idvar=;  
  
run;
```

```
data refxt01;  
  
  set SUPPXT;  
  
  where idvar = "XTREFID";  
  
  xtrefid = idvarval;  
  
run;
```

```
proc sort data = refxt01;  
  
  by usubjid xtrefid;  
  
run;
```

```
proc transpose data = refxt01 out = refxt02(drop=_name__label_);  
  
  by usubjid xtrefid;  
  
  var qval;  
  
  id qnam;  
  
  idlabel qlabel;
```

```
run;
```

```
data seqxt01;
```

```
  set SUPPXT;
```

```
  where idvar = "XTSEQ";
```

```
  xtseq = input(idvarval, best.);
```

```
run;
```

```
proc sort data = seqxt01;
```

```
  by usubjid xtseq;
```

```
run;
```

```
proc transpose data = seqxt01 out = seqxt02(drop=_name_ _label_);
```

```
  by usubjid xtseq;
```

```
  var qval;
```

```
  id qnam;
```

```
  idlabel qlabel;
```

```
run;
```

```
data xt;
```

```
  merge xt (in=a) refxt02;
```

```
  by usubjid xtrefid;
```

```
run;
```

```
proc sort data = xt;
```

```
by usubjid xtseq;
```

```
run;
```

```
data xt;
```

```
merge xt (in=a)seqxt02;
```

```
by usubjid xtseq;
```

```
if upcase(compress(filestat)) ne 'REJECTED';
```

```
run;
```

```
data xta;
```

```
set xt (where=(xttestcd in ('NI' 'VI' 'DI' 'QMI' 'QCI' 'II' 'DFI' 'WI' 'PMI' 'PCI' 'RMI' 'RCI' 'PN' 'POSQCI'  
'SPI')));
```

```
keep usubjid xtrefid xttestcd xtcattxtscat visitnum visit xtdtc xtstdtc xtendtc xtstresn xtdy xtstdy;
```

```
run;
```

```
/* Total number of puffs */
```

```
data npc;
```

```
set xta(where=(xttestcd='NI'));
```

```
run;
```

```
proc sort data=npc;
```

```
by usubjid xtrefid visitnum descending xtstresn;
```

```
run;
```

```
data npc;
```

```
set npc;
```

```

by usubjid xtrefid visitnum descending xtstresn;

format dtype $10. calc BEST32. xttest $80.;

if first.visitnum;

calc=round(xtstresn,1/10**10);

xttestcd='NPC';

xttest='Total number of puffs';

dtype='SUM';

drop xtstresn;

run;

/* Volume, puff duration, inter puff interval, smoking duration, total work*/

data totals;

    set xta (where=(xttestcd ne 'NI'));

run;

proc sort data=totals;

    by usubjid xtrefid xttestcd xtcac xtscat visitnum visit xtdtc xtstdtc xtendtc xtdy xtstdy;

        where xtstresn ne .;

run;

proc summary data=totals noprint;

    by usubjid xtrefid xttestcd xtcac xtscat visitnum visit xtdtc xtstdtc xtendtc xtdy xtstdy;

    var xtstresn;

    output out=totals2(drop=_) sum=sum;

run;

```

```

data sum;

set totals2 (rename=(xttestcd=xttestcd2 ));

               length xttestcd $8 xttest $80;

               format dtype $10. calc BEST32. ;

dtype='SUM';

calc=round(sum,1/10**10);


if xttestcd2='DFI' then do;

    xttestcd='TDFI';

    xttest='Total smoking duration';

end;

else if xttestcd2='DI' then do;

    xttestcd='TDI';

    xttest='Total puff duration';

end;

else if xttestcd2='II' then do;

    xttestcd='TII';

    xttest='Total inter puff interval';

end;

else if xttestcd2='VI' then do;

    xttestcd='TVOL';

    xttest='Total puff volume';

end;

else if xttestcd2='WI' then do;

```

```

    xttestcd='TWI';

    xttest='Total work';

end;

                                else if xttestcd2='QCI' then do;

    xttestcd='QCI';

    xttest="";

end;

else if xttestcd2='QMI' then do;

    xttestcd='QMI';

    xttest="";

end;

else if xttestcd2='PMI' then do;

    xttestcd='PMI';

    xttest="";

end;

else if xttestcd2='PCI' then do;

    xttestcd='PCI';

    xttest="";

end;

                                else delete;

                                drop sum xttestcd2;

run;

/* Calculate averages */

data npc2;

```



```

set npc;

rename calc=npc;

keep usubjid xtrefid calc visitnum visit;

run;

proc sort data=npc2;

    by usubjid xtrefid visitnum visit;

run;

proc sort data=sum;

    by usubjid xtrefid visitnum visit;

run;

data avg;

    merge sum (in=a) npc2;

    by usubjid xtrefid visitnum visit;

                                if a;

    length xttest2 $80 xttestcd2 $8;

    format dtype $10. CALC1 BEST32.;

                                if xttestcd='TDFI' then delete;

    if nmiss(calc, npc)=0 then calc1=round(calc/npc,1/10**10);

dtype='AVERAGE';

```

```
if xttestcd='TDI' then do;
    xttestcd2='AVGDI';
    xttest2='Average puff duration';
end;

if xttestcd='TII' then do;
    xttestcd2='AVGII';
    xttest2='Average inter puff interval';
end;

if xttestcd='PCI' then do;
    xttestcd2='AVGPCI';
    xttest2='Average Peak pressure drop';
end;

if xttestcd='PMI' then do;
    xttestcd2='AVGPMI';
    xttest2='Average pressure drop';
end;

if xttestcd='QCI' then do;
    xttestcd2='AVGQCI';
    xttest2='Average Peak flow';
end;

if xttestcd='QMI' then do;
    xttestcd2='AVGQMI';
    xttest2='Average flow';
end;
```

```

if xttestcd='TVOL' then do;

    xttestcd2='AVGVI';

    xttest2='Average puff volume';

end;

if xttestcd='TWI' then do;

    xttestcd2='AVGWI';

    xttest2='Average Work';

end;


drop calc npc xttestcd xttest;

rename calc1=calc xttestcd2=xttestcd xttest2=xttest;

run;


/* Smoking Intensity */

data ratio;

    merge sum(where=(xttestcd in ('TVOL', 'TDI')))

        sum(where=(oldcd='TDI') keep=calc xttestcd usubjid xtrefid /*xtcat xtscat*/ visitnum visit
rename=(calc=tdfi xttestcd=oldcd));

    by usubjid xtrefid visitnum visit;

run;


data ratio2;

    set ratio;

                                length xttest2 $80 xttestcd2 $8;

format dtype $10. calc1 BEST32.;

```

```

calc1=round(calc/tdfi,1/10**10);

dtype='RATIO';

if xttestcd='TVOL' then do;

    xttestcd2='SMINT';

    xttest2='Smoking Intensity';

                                calc1=round(calc/tdfi,1/10**10);

                                end;

                                if xttestcd='TDI' then do;

                                xttestcd2='PTI';

                                xttest2='Puffing Time Index';

                                calc1=round(100*calc/tdfi,1/10**10);

                                end;

drop calc xttestcd xttest tdfi oldcd;

rename calc1=calc xttestcd2=xttestcd xttest2=xttest;

run;

/* Puff Frequency */

data pfreq;

    merge sum(where=(xttestcd='TDFI')) npc2;

    by usubjid xtrefid visitnum visit;

run;

data pfreq2;

```

```

set pfreq;

format dtype $10. CALC1 BEST32.;

if nmiss(calc, npc)=0 then calc1=round(npc/(calc/60),1/10**10);

                                dtype='RATIO';

xttestcd='PFEQ';

xttest='Puff Frequency';


drop calc npc;

rename calc1=calc;

run;


* remove extra records in sum dataset;

data sum;

    set sum;

                                if xttestcd in ('QCI', 'QMI', 'PMI', 'PCI') then delete;

                                run;


/* Set per-cigarette parameters together from npc2 totals4 and avg2 */

data all;

    set npc avg sum ratio2 pfreq2;

    format paramtyp $10. avalc1 $60.xttest $80.;

    paramtyp='DERIVED';

```

```
if index(xttest,'Total') then do;
    avalc1=strip(put(calc,BEST32.));
end;

else if index(xttest,'Average') or xttestcd in ('SMINT' 'PFEQ' 'PTI') then do;
    avalc1=strip(put(calc,BEST32.));
end;

run;
```

```
proc sort data=all;
    by usubjid visitnum visit xtcac xtscac xttestcd xttest;
```

```
proc summary data=all noprint;
    by usubjid visitnum visit xtcac xtscac xttestcd xttest;

    var calc;

    output out=allavg(drop=_) mean=mean;

run;
```

```
data allavg2;

    set allavg;

    format paramtyp $10. dtype $10. mean BEST32. avalc1 $60.;

    paramtyp='DERIVED';

    dtype='AVERAGE';
```

```
xttestcd=compress('A' || xttestcd);

mean=round(mean,1/10**10);

avalc1=strip(put(mean,best32.));

rename mean=calc;

run;
```

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

```
* bring in XT ;
```

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

```
proc sort data=xt;

    by usubjid xtseq;
```

```
run;
```

```
proc sort data=all;

    by usubjid;
```

```
run;
```

```
proc sort data=allavg2;

    by usubjid;
```

```
run;
```

```
data xt2;

    set xt all allavg2 (in=avg);

    by usubjid;
```

format paramcd \$8. parcat1 \$60. parcat2 \$200. param \$80. avisit \$40. paramn parcat1n  
parcat2n 8. aval BEST32. avisitn best.

avalc \$60. adt asdt aendt date9. avalu \$20. asdtm aendtm datetime13.;

\* parameter variables ;

paramcd = strip(xttestcd);

param = strip(xttest);

parcat1=strip(propcase(xtcat));

parcat2=strip(propcase(xtscat));

if upcase(parcat1)='FILTER ANALYSIS' then parcat1n=1;

else if upcase(parcat1)='VISUAL INSPECTION OF TOBACCO PLUG' then parcat1n=2;

else if upcase(parcat1)='TOPOGRAPHY' then parcat1n=3;

if upcase(parcat2)='ANALYSIS FULL FILTER' then parcat2n=1;

else if upcase(parcat2)='ANALYSIS MOUTHPIECE' then parcat2n=2;

else if upcase(parcat2)='ANALYSIS PLA + HAT' then parcat2n=3;

else if upcase(parcat2)='EXTRACTION' then parcat2n=4;

if parcat2 not in (' 'Extraction') then param=strip(propcase(parcat2))||' '||strip(param);

if index(param,'Pla') then param=tranwrd(param,' Pla',' PLA');

if paramcd='ABUVTABS' then do;

if parcat2n=1 then paramcd='FABUVTAB';

else if parcat2n=2 then paramcd='MABUVTAB';

else if parcat2n=3 then paramcd='PABUVTAB';



end;

else if paramcd='NICOAMT' then do;

if parcat2n=1 then paramcd='FNICO';

else if parcat2n=2 then paramcd='MNICO';

else if parcat2n=3 then paramcd='PNICO';

end;

else if paramcd='NICOAMTF' then do;

if parcat2n=1 then paramcd='FNICOF';

else if parcat2n=2 then paramcd='MNICOF';

else if parcat2n=3 then paramcd='PNICOF';

end;

else if paramcd='NMUVABSF' then do;

if parcat2n=1 then paramcd='FNMUVABS';

else if parcat2n=2 then paramcd='MNMUVABS';

else if parcat2n=3 then paramcd='PNMUVABS';

end;

if paramcd='S.PI' then paramcd=compress(paramcd,'.');

if PARAMCD='S\_PI' THEN PARAMCD=COMPRESS(PARAMCD,'\_');

if paramcd='NPC' then paramn=1;

else if paramcd='TVOL' then paramn=2;

else if paramcd='AVGVI' then paramn=3;

else if paramcd='AVGDI' then paramn=4;

else if paramcd='TDI' then paramn=5;

else if paramcd='AVGQMI' then paramn=6;  
else if paramcd='AVGQCI' then paramn=7;  
else if paramcd='TII' then paramn=8;  
else if paramcd='AVGII' then paramn=9;  
else if paramcd='TDFI' then paramn=10;  
else if paramcd='TWI' then paramn=11;  
else if paramcd='AVGWI' then paramn=12;  
else if paramcd='AVGPMI' then paramn=13;  
else if paramcd='AVGPCI' then paramn=14;  
else if paramcd='SMINT' then paramn=15;  
else if paramcd='PTI' then paramn=16;  
else if paramcd='PFEQ' then paramn=17;  
else if paramcd='NI' then paramn=18;  
else if paramcd='VI' then paramn=19;  
else if paramcd='DI' then paramn=20;  
else if paramcd='QMI' then paramn=21;  
else if paramcd='QCI' then paramn=22;  
else if paramcd='II' then paramn=23;  
else if paramcd='DFI' then paramn=24;  
else if paramcd='WI' then paramn=25;  
else if paramcd='PMI' then paramn=26;  
else if paramcd='PCI' then paramn=27;  
else if paramcd='RMI' then paramn=28;  
else if paramcd='RCI' then paramn=29;  
else if paramcd='PN' then paramn=30;

else if paramcd='POSQCI' then paramn=31;  
else if paramcd='SPI' then paramn=32;  
else if paramcd='FNICOF' then paramn=33;  
else if paramcd='FABUVTAB' then paramn=35;  
else if paramcd='FNICO' then paramn=34;  
else if paramcd='FNMUVABS' then paramn=36;  
else if paramcd='MNICOF' then paramn=37;  
else if paramcd='MNICO' then paramn=38;  
else if paramcd='MABUVTAB' then paramn=39;  
else if paramcd='MNMUVABS' then paramn=40;  
else if paramcd='PNICOF' then paramn=41;  
else if paramcd='PNICO' then paramn=42;  
else if paramcd='PABUVTAB' then paramn=43;  
else if paramcd='PNMUVABS' then paramn=44;  
else if paramcd='DILU\_VOL' then paramn=45;  
else if paramcd='EXTR\_VOL' then paramn=46;  
else if paramcd='SMPL\_VOL' then paramn=47;  
else if paramcd='TOTL\_VOL' then paramn=48;  
else if paramcd='VITP\_L' then paramn=49;  
else if paramcd='ANPC' then paramn=50;  
else if paramcd='ATVOL' then paramn=51;  
else if paramcd='AAVGVI' then paramn=52;  
else if paramcd='AAVGDI' then paramn=53;  
else if paramcd='ATDI' then paramn=54;  
else if paramcd='AAVGQMI' then paramn=55;

```
else if paramcd='AAVGQCI' then paramn=56;
else if paramcd='ATII' then paramn=57;
else if paramcd='AAVGII' then paramn=58;
else if paramcd='ATDFI' then paramn=59;
else if paramcd='ATWI' then paramn=60;
else if paramcd='AAVGWI' then paramn=61;
else if paramcd='AAVGPMI' then paramn=62;
else if paramcd='AAVGPCI' then paramn=63;
else if paramcd='ASMINT' then paramn=64;
else if paramcd='APTI' then paramn=65;
else if paramcd='APFEQ' then paramn=66;
else if paramcd='HSTALL' then paramn=99;
```

\* analysis variables ;

```
aval = xtstresn;
```

```
IF INDEX(XTSTRESC,'NA')=0 THEN DO;
```

```
    avalc = propcase(xtstresc, '.');
```

```
END;
```

```
ELSE AVALC=LEFT(TRIM(XTSTRESC));
```

```
IF NOT MISSING(PARAMTYP) THEN DO;
```

```
    AVALC=STRIP(AVALC1);
```

```
    AVAL=INPUT(AVALC,BEST32.);
```

```
END;
```

```
avalu = strip(xtstresu);
```

```

if paramtyp='DERIVED' then do;

  if paramcd in ('TVOL' 'AVGVI' 'ATVOL' 'AAVGVI') then avalu=strip('mL');

  else if paramcd in ('AVGDI' 'TDI' 'TII' 'AVGII' 'TDFI' 'AAVGDI' 'ATDI' 'ATII' 'AAVGII' 'ATDFI') then
    avalu=strip('s');

  else if paramcd in ('AVGQMI' 'AVGQCI' 'SMINT' 'AAVGQMI' 'AAVGQCI' 'ASMINT') then
    avalu=strip('mL/s');

  else if paramcd in ('TWI' 'AVGWI' 'ATWI' 'AAVGWI') then avalu=strip('mJ');

  else if paramcd in ('AVGPMI' 'AVGPCI' 'AAVGPMI' 'AAVGPCI') then avalu=strip('mmWg');

  else if paramcd in ('PTI' 'APTI') then avalu=strip('%');

  else if paramcd in ('PFEQ' 'APFEQ') then avalu=strip('puffs/min');

end;

if avalu ne '' then do;

  param=strip(param)||'('||strip(avalu)||')';

end;

else if avalu="" then do;

  if paramcd in ('FNICO' 'PNICO' 'MNICO') then param=strip(param)||' '||strip('(mg/mL)');

  else if paramcd in ('FNICOF' 'PNICOF' 'MNICOF') then param=strip(param)||' '||strip('(mg/filter)');

  else if paramcd in ('FNMUVABS' 'PNMUVABS' 'MNMUVABS') then param=strip(param)||'
'||strip('(per filter)');

end;

if avg then param=compbl(param)||' (average over visit)';

```

\* visit details ;

avisit = propcase(visit);

avisitn = visitnum;

```

* dates;

        if length(xtdtc)>=10 then adt = input(scan(xtdtc,1,"T"),yymmdd10.);

if length(xtstdtc)>=10 then asdt = input(scan(xtstdtc,1,"T"),yymmdd10.);

if index(xtstdtc,"T") then do;

    asttm = input(scan(xtstdtc,2,"T"),time8.);

    astdtm = dhms(asdt,0,0,asttm);

end;

if length(xtendtc)>=10 then aendt = input(scan(xtendtc,1,"T"),yymmdd10.);

if index(xtendtc,"T") then do;

    aentm = input(scan(xtendtc,2,"T"),time8.);

    aendtm = dhms(aendt,0,0,aentm);

end;


if paramtyp='DERIVED' and paramn in (50:66) then do;

                                ASTDTM =.; XTDTC ="; XTDY=.; XTSTDTC=";
XTEBDTC="; XTSTDY=.; ADT=.; ADY=.; ASTDT=.; AENDTM=.; ASTDAY=.;

end;


keep usubjid xtseq xtrefid xtgrpid param: parcat: aval: avisit: xtstat xtreasnd xtdtc xtdy xtstdtc xtendtc

    xtstdy epoch xteval xtspid xteval dtype adt asdt aendt astdtm aendtm asttm KIT_NUM VIAL_NUM
/*FILTNUM*/ SODENUM SOSHNUM ;

run;


*****;

* Combine ADSL and XT data *;

```

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

```
* treatment period;
```

```
%m_totper;
```

```
data xt3;
```

```
merge adsl xt2(in=a);
```

```
by usubjid;
```

```
if a;          * only include subjects with data ;
```

```
format aperiod trtan trtpn astday aday 8. trta trtp $40. aperiodc $10.;
```

```
if nmiss(astdt,trtsdt)=0 then astday = astdt - trtsdt + 1;
```

```
if nmiss(adtt,trtsdt)=0 then aday=adtt - trtsdt+1;
```

```
* allocate tretament and period;
```

```
%m_perall(dvar1 = astdtm, dvar2 = astdt);
```

```
aperiodc = 'Period ' || put(aperiod,1.);
```

```
run;
```

```
data xt3;
```

```
set xt3;
```

```
if (avisitn < 101 or (avisitn = 101 and (. < astdtm < trtsdtm))) and xtstat^='NOT  
DONE' then bl = 1;
```

```
else bl=.
```

```
if avisitn>=101 and bl^=1 then bl=0;
```

```
proc sort data=xt3;
```

```
by usubjid paramn descending bl descending XTDTTC descending XTSTDTC descending XTENDTC  
descending avisitn xtrefid xtseq;
```

```
run;
```

```
** set up baseline flag base and change**;
```

```
data xt4;
```

```
set xt3;
```

```
by usubjid paramn descending bl descending XTDTC descending XTSTDTC  
descending XTENDTC descending avisitn xtrefid xtseq;
```

```
format abfl $2.;
```

```
retain base;
```

```
if first.paramn then base=.;
```

```
if bl=1 and first.bl then do; abfl='Y'; base=aval; end;
```

```
if bl=0 and base^=. and aval^=. then do;
```

```
chg=aval-base;
```

```
if base not in (., 0) then pchg=(chg/base)*100;
```

```
if base=0 then pchg=chg*100;
```

```
end;
```

```
run;
```

```
data xt4;
```

```
set xt4;
```

```
format asper 8. asperc $40.;
```

```
if avisitn < 101 then asper=1;
```

```
else if 101<=avisitn<=106 then asper=2;
```

```
else if 106<avisitn<=191 then asper=3;
```

```
else if avisitn>191 then asper=4;
```



```

        if asper=1 then asperc= 'Pre-Randomization Period';

        else if asper=2 then asperc='Confinement Period';

        else if asper=3 then asperc='Ambulatory Period';

        else if asper=4 then asperc='Safety Follow-up Period';

        if TRTPN=97 or TRTPN= 98 then do;ASPER=1;ASPERC='Pre-
Randomization Period'; end;

```

```

        if 101<=avisitn<=106 then apuper=1;

else If 106<avisitn<=131 then apuper=2;

else if 131<avisitn<=161 then apuper=3;

else if 161<avisitn<=191 then apuper=4;

```

```

        if apuper=1 then apuperc= 'Period 1';

        else if apuper=2 then apuperc='Period 2';

        else if apuper=3 then apuperc='Period 3';

        else if apuper=4 then apuperc='Period 4';

```

```

        if TRTPN=97 | TRTPN=98 then do; APUPER=.; APUPERC = ""; end;

```

```

run;

```

```

/* Windows */

```

```

data slxt2;

```

```

set xt4;

```

```

format awlo awhi datetime13. awrange $40.;

```

```
if astdt ^=.
```

```
and parcat1='Topography' and aval^=. then do;
```

```
if avisitn<130 then do;
```

```
awlo=(astdt*86400)+(6.5*60*60);
```

```
awhi=(astdt*86400)+(23*60*60);
```

```
end;
```

```
else if avisitn in (130, 160, 190) then do;
```

```
    If .<ASTTM<"08:30"t then do; AWLO=(astdt*86400)+(8.5*60*60); AWHI = AWLO + (4*60*60)  
+ (15*60); end;
```

```
    else if ASTTM>"09:30"t then do; AWLO=(astdt*86400)+(9.5*60*60); AWHI = AWLO + (4*60*60) +  
(15*60); end;
```

```
    else if "08:30"t<= ASTTM<="09:30"t then do; AWLO=astdtm; AWHI = AWLO + (4*60*60) + (15*60);  
end;
```

```
end;
```

```
end;
```

```
    if nmiss (awlo, awhi) =0 then awrange=strip(put(awlo,datetime13.))|| '-'  
|| strip(put(awhi,datetime13.));
```

```
RUN;
```

```
data slxt2;
```

```
set slxt2;
```

```
format anl01fl $2. devn best. devwc $10.;
```

```
if xtstat ne 'NOT DONE' then do;
```

```

if astdtm<awlo and nmiss(astdtm,awlo) =0 then do;

    devn=floor((astdtm-awlo)/60);

    devwc=compress(put(floor((astdtm-awlo)/60),best.));

end;

else if aendtm>awhi and nmiss(aendtm,awhi)=0 then do;

    devn=ceil((aendtm-awhi)/60);

    devwc=compress(put(ceil((aendtm-awhi)/60),best.));

end;

end;

```

```

IF NOT MISSING(DEVWC) THEN DO;

    IF INDEX(DEVWC,'-')=0 THEN DEVWC=CATS(CATS('+',DEVWC),' min');

    ELSE IF INDEX(DEVWC,'-') THEN DEVWC=CATS(DEVWC,' min');

END;

```

```

if awlo ^= . and awlo <= astdtm and aendtm <= awhi then anl01fl='Y';

run;

```

```

proc sort data = slxt2;

    by usubjid paramcd avisitn xtrefid xtdtc xtstdtc xtendtc xtseq;

run;

```

```

data slxt3;

    format anl02fl $2.;

    set slxt2;

```

```

by usubjid paramcd avisitn xtrefid xtdtc xtstdtc xtendtc xtseq;

        if _n_ =1 then delete;

        if first.xtrefid then anl02fl='Y';

if ablfl='Y' then do; chg=.; pchg=.; end;

        if TRTSDT=. then do; ablfl=''; base=.; end;

run;

*****.

* create output dataset ;

*****.

options replace;

proc sort data = slxt3 out=adxt;

        by USUBJID AVISITN PARAMN XTREFID XTSEQ VIAL_NUM ASTDTM;

run;

%m_chglength(inds=adxt,varlist=XTREFID PARCAT2, lenlist= $20 $1);

%m_attrib_adam (dset=ADXT);

data adam.adxt (label="Smoking Profile Analysis Dataset");

        set adxt;

run;

options noreplace;

```

```
proc printto; run;
```

```
%m_logchk;
```

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

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

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