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Covance Study ID      : COV-000000106343
Program Name          : d_2adpc.sas
Purpose               : Program to create ADQSPA dataset
Author               : cvn_pshe
Date of Creation      : 3MAY2015

Input Data            : ADAM.ADSL,SDTM.PC,SDTM.EX,SDTM.SV
Output Data           : ADAM.ADQSPA
Macros Called         : m_printto,, m_logchk, m_attrib_adam

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Modification History
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Modified by           :
Modification Date      :
Modification Description:
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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                               ;
*=====;
* pull in pkmerge data;
* for some studies this will contain only a subset of the data please check SAP;

libname sdtm "/cvn/projects/prj/data/000000106343/datasets/sdtm/sdtmx";
data pkmerge;
    set adam.pkmerge;
    format avalu $20.;

    *test date and time;
    format adt date9. atm time5. adtm datetime13.;
    if not missing(pcdtc) and length(pcdtc) >=10 then adt=input(scan(pcdtc,1,'T'),yymmdd10.);
    atm=input(scan(pcdtc,2,'T'),time8.);
    if nmiss(adtm,atm) =0 then adtm=dhms(adtm, 0,0,atm);
    if avisit='Day 6' then avisit='Day 6/Discharge';
    avalu=trim(units);
    drop siteid weightbl exdose exdosu trta: trtp: aday pcorres ;
run;

%m_chglength(inds=pkmerge,varlist=avalc, lenlist=$200);

* further code will be required to include data from SDTM.PC for other studies;
* identify SA arm subjects;

data sa;
    set adam.adsl(where=(armcd='SMABST'));
    keep usubjid;
run;

*pick up data not used in PKmerge;
data pc;
    merge sdtm.pc(in=b) sa(in=a);
    by usubjid;
    if a then sa=1;
    if b;

    format avalc $200. aval best. avalu $20. param $120. paramcd $3. paramn subjidn 8.;
    subjidn=input(scan(usubjid,6,'-'),best.);

    *results;
    aval=pcstresn;
    avalc=pcstresc;
    avalu=pcstresu;

    *parameter category;
    if pctestcd ne '' then do;
        if not missing(pcstresu) and pctest ne '' then param=trim(pctest) ||' ('||trim(pcstresu)||')';
        else if pctestcd='COT' then param='Cotinine (ng/mL)';
        else if pctestcd='NIC' then param='Nicotine (ng/mL)';
        paramcd=pctestcd;

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end;

if pctestcd='NIC' then
    paramn=1;
else if pctestcd='COT' then
    paramn=2;
else put 'PCTEST not recognised : ' pctestcd;

*treatment period;
format aperiod 8.;
aperiod=1;

*test date and time;
/* format adt date9. atm time5. adtm datetime13.;*/
/* length pcdtc1 $19.;*/
/* pcdtc1=pcdtc;*/
/* if not missing(pcdtc) and length(pcdtc) gt 10 then adtm=input(pcdtc1,e8601dt.);*/
/* adt=input(scan(pcdtc,1,'T'),yymmdd10.);*/
/* atm=input(scan(pcdtc,2,'T'),time8.);*/

format adt date9. atm time5. adtm datetime13.;
if not missing(pcdtc) and length(pcdtc) >=10 then adt=input(scan(pcdtc,1,'T'),yymmdd10.);
atm=input(scan(pcdtc,2,'T'),time8.);
if nmiss(adtm)=0 then adtm=dhms(adtm, 0,0,atm);

*visits and timepoints;
format avisit atpt $40. avisitn atptn 8.;
avisit=propcase(visit);
avisitn=visitnum;

* times taken from protocol due to naming convention in data (2h intervals);
/* if upcase(pctpt)='T0 -15 MIN' then do;*/
/* atpt='15 min < T0';*/
/* atptn=0;*/
/* ntime=0;*/
/* end;*/
/* else if compress(upcase(pctpt))='T1' then do;*/
/* atpt='T0 + 2 h';*/
/* atptn=1;*/
/* ntime=2*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T2' then do;*/
/* atpt='T0 + 4 h';*/
/* atptn=2;*/
/* ntime=4*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T3' then do;*/
/* atpt='T0 + 6 h';*/
/* atptn=3;*/
/* ntime=6*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T4' then do;*/
/* atpt='T0 + 8 h';*/
/* atptn=4;*/
/* ntime=8*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T5' then do;*/
/* atpt='T0 + 10 h';*/
/* atptn=5;*/
/* ntime=10*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T6' then do;*/
/* atpt='T0 + 12 h';*/
/* atptn=6;*/
/* ntime=12*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T7' then do;*/
/* atpt='T0 + 14 h';*/
/* atptn=7;*/
/* ntime=14*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T8' then do;*/
/* atpt='T0 + 16 h';*/
/* atptn=8;*/
/* ntime=16*60;*/
/* end;*/
/* else if compress(upcase(pctpt))='T0+20H' then do;*/
/* atpt='T0 + 20 h';*/

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/*      atptn=9;*/
/*      ntime=20*60;*/
/*      end;*/
/*      else if compress(upcase(pctpt))='T0+24H' then do;*/
/*          atpt='T0 + 24 h';*/
/*          atptn=10;*/
/*          ntime=24*60; */
/*      end;*/
/*      else if not missing(pctpt) then put 'Check PCTPT as unable to map: ' usubjid= avisit= pctpt=;*/

if avisit in ('Day 0' 'Day 1' 'Day 2' 'Day 3' 'Day 4') then do;
    atpt='08:00 PM - 09:30 PM';
    atptn=11;
end;

if avisit in ('Day 30' 'Day 60') then do;
    atpt='10:00 AM - 11:30 AM';
    atptn=12;
end;

if avisit in ('Day 90') then do;
    atpt='10:00 AM - 12:30 PM';
    atptn=13;
end;

if sa=1 and avisit ='Day 5' then do; atpt='08:00 PM - 09:30 PM'; atptn=11; end;
else if sa=1 and avisit ='Day 6/Discharge Confinement' then do; atpt='08:00 AM - 09:30 AM'; atptn=14; end;

keep usubjid subjidn pcseq pcspec pcstat pcneasnd param: avisit: atpt: aperiod aval avalc avalu pcdtc adt atm adtm
/*ntime*/ pcorres pclloq sa;

if a /*and avisit in ('Day 5' 'Day 6/Discharge')*/ then output; * SA data not included in pkmerge;
else if not a and not(avisit in ('Day 5', 'Day 6/Discharge Confinement')) then output; * all other data not in Day 5 and Day 6;
run;

* set all and populated PCLLOQ***;
data adpc;
    set pkmerge pc;
    format /*pnomtime 8.*/ dtype $20. ;
    rename ntime = pnomtime;
    format ablf1 $2.;
    if avisit='Day 0' and aval ne . then ablf1='Y';
    if index(avalc,'BLQ') then do;
        aval=.;
        dtype=' ';
        bloqfl='Y';
        pclloq = input(scan(avalc, 2, '< ( )'), best.);
    end;
end;
run;

* derive bloqfl and imputed records;
data blq;
    set adpc;
    format bloqfl $2.;
    if index(avalc,'BLQ');
    aval=pclloq/2;
    avalc=strip(put(aval, best.));
    dtype='BLQHALF';
    bloqfl='Y';
run;

data adpc;
    set adpc blq;
run;

proc sort data=adpc;
    by usubjid subjidn pcseq;
run;

* bring in pc data for day ;
data pca;
    set sdtm.pc;
    format subjidn 8.;
    subjidn=input(scan(usubjid,6,'-'),best.);
    keep usubjid pcseq pcdy subjidn epoch;
run;

proc sort data=pca;

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    by usubjid subjidn pcseq;
run;

data adpc;
    merge pca adpc (in=a);
    by usubjid subjidn pcseq;
    if a;
run;

*bring in screening date;
data sv;
    set sdtm.sv(where=(visit='SCREENING'));
    format scrndt date9.;
    scrndt=input(svstdtc,ymmdd10.);
    format subjidn 8.;
    subjidn=input(scan(usubjid,6,'-'),best.);
    keep usubjid scrndt subjidn;
run;

proc sort data=adam.adsl out=adsl;
    by usubjid subjidn;
run;

proc sort data=sv;
    by usubjid subjidn;
run;

* bring in adsl for T0 and subject level data;
data adsl;
    merge adsl adpc(in=a) sv;
    by usubjid subjidn;
    if a;

    format aperiodc $8.;
    aperiodc='Period '||compress(put(aperiod,1.));

    format trta trtp $40. trtan trtpn 8.;

    if aperiod=1 then do;
        trta=trt01a;
        trtp=trt01p;
        trtan=trt01an;
        trtpn=trt01pn;
    end;
run;

*need first product use dates and times;
*included all so that there is needed;
data ex;
    set adam.adex;
    if astday ge 0;
    keep usubjid astdt astdtm astday;
/*   where PARCAT2='PRODUCT USE CONFINEMENT' and AVISITN=105 and dtype='';*/
run;

proc sort data=ex;
    where astdtm ne .;
    by usubjid astday astdtm;
run;

data ex;
    set ex;
    by usubjid astday;
    if first.astday;
run;

proc transpose data=ex out=texdx prefix=tr;
    var astdtm;
    by usubjid;
    id astday;
run;

* windows;
data adpc2;
    format awlo awhi datetime13. awrange $50. aday 8.; ;
    merge adsl(in=a) texdx;
    by usubjid;
    if a;

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

if trta in ('THSm2.2', 'mCC') and not missing(tr5) then trtstart=tr5; /*specific for REXC where pkday = day 5*/

if nmiss(adt)=0 then do;
if avisit in ('Day 0', 'Day 1', 'Day 2', 'Day 3', 'Day 4') then do;
awlo=adt*24*60*60+'20:00't;
awhi=adt*24*60*60+'21:30't;
end;
else if avisit in ('Day 30', 'Day 60') then do;
awlo=adt*24*60*60+'10:00't;
awhi=adt*24*60*60+'11:30't;
end;
else if avisit in ('Day 90') then do;
awlo=adt*24*60*60+'10:00't;
awhi=adt*24*60*60+'12:30't;
end;
end;

if avisit in ('Day 5', 'Day 6/Discharge Confinement') and trta in ('THSm2.2', 'mCC') and nmiss(trtstart)=0 then do;
if atptn=0 then do;
awlo=trtstart-'00:15't;
awhi=trtstart;
end;
else if atptn=1 then do; /* 2 h */
awlo=trtstart+'02:00't;
awhi=trtstart+'02:05't;
end;
else if atptn=2 then do; /* 4 h */
awlo=trtstart+'04:00't;
awhi=trtstart+'04:05't;
end;
else if atptn=3 then do; /* 6 h */
awlo=trtstart+'06:00't;
awhi=trtstart+'06:05't;
end;
else if atptn=4 then do; /* 8 h */
awlo=trtstart+'08:00't;
awhi=trtstart+'08:05't;
end;
else if atptn=5 then do; /* 10 h */
awlo=trtstart+'10:00't;
awhi=trtstart+'10:05't;
end;
else if atptn=6 then do; /* 12 h */
awlo=trtstart+'12:00't;
awhi=trtstart+'12:05't;
end;
else if atptn=7 then do; /* 14 h */
awlo=trtstart+'14:00't;
awhi=trtstart+'14:05't;
end;
else if atptn=8 then do; /* 16 h */
awlo=trtstart+'16:00't;
awhi=trtstart+'16:05't;
end;
else if atptn=9 then do; /* 20 h */
awlo=trtstart+'20:00't;
awhi=trtstart+'20:05't;
end;
else if atptn=10 then do; /* 24 h */
awlo=trtstart+'24:00't;
awhi=trtstart+'24:05't;
end;

/* set these subject to null since they have first asdtm = . */
/* if subjidn in (2143 2174 1031 1042 1069 1160) then do; awlo=.; awhi=.; end;*/

end;* of trtstart;

if trta in ('SA') and nmiss(adt)=0 then do;
if avisit in ('Day 5') then do;
awlo=adt*24*60*60+'20:00't;
awhi=adt*24*60*60+'21:30't;
end;
else if avisit in ('Day 6/Discharge Confinement') then do ;
awlo=adt*24*60*60+'08:00't;

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        awhi=adt*24*60*60+'09:30't;
    end;
end;

if nmiss(awlo, awhi)=0 then awrange=strip(put(awlo,datetime16.)) || '-' || strip(put(awhi,datetime16.));
run;

data adpc2;
    set adpc2;
    format devn devw apuper 8.  DEVCW apuperc $10.;

    if nmiss(PACTIME, PNOMTIME)=0 then  DEVN=PACTIME-PNOMTIME;
/* */
/*      IF PCSTAT NE 'NOT DONE'  and nmiss(adtm, awlo, awhi)=0 THEN DO;*/
/*          IF ADTM<AWLO THEN DEVW=FLOOR((ADTM-AWLO)/60);*/
/*          ELSE IF ADTM>AWHI THEN  DEVW=CEIL((ADTM-AWHI)/60);*/
/*          if devw ne . then do;*/
/*              devwc = strip(put(DEVW, best8.0)) || " min";*/
/*              if devw gt 0 then devwc = cats("+",devwc);*/
/*          end;*/
/*      END;*/

if .<ADTM<AWLO then DEVW=(ADTM-AWLO)/60 ;
    else if ADTM>AWHI>. then DEVW=(ADTM-AWHI)/60 ;
if devw ne . then do;
    devwc = strip(put(round(devw,0.001),best8.3)) || " min";
    if devw gt 0 then devwc = cats("+",devwc);
end;

if nmiss(DEVN, PNOMTIME)=0 and PNOMTIME ne 0 then PCTDEV=ROUND(100*DEVN/PNOMTIME, 0.1);

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;

* Analysis records flag;
data adpc2;
    set adpc2;
    format anl01f1 $2. aexreas $200.;

    if bloqf1='' and aval ne . then do;
        if avisit in ('Day 0','Day 1','Day 2','Day 3','Day 4', 'Day 5', 'Day 6/Discharge Confinement' ) then do;
            if nmiss(awlo, awhi, adtm)=0 and awlo <= adtm <= awhi then anl01f1='Y';
            end;
        else if avisit not in ('Day 0','Day 1','Day 2','Day 3','Day 4', 'Day 5', 'Day 6/Discharge Confinement' ) then anl01f1='Y';
        end;
    else if bloqf1='Y' and aval ne . and dtype = "BLQHALF" then anl01f1='Y';

    if compress(fasfl)='N' then aexreas=strip(fasreas);
    if anl01f1 ='' then aexreas=trim(fasreas);

run;

data adpc2;
    set adpc2;
    if not missing(atm) then tm8_dist=abs(atm-'20:00't) ;

proc sort data=adpc2;
    by usubjid paramn avisit dtype tm8_dist ;
run ;

data adpc2;
    set adpc2;
    format anl02f1 $2.;
    by usubjid paramn avisit dtype tm8_dist ;
    if first.avisit and aval^=. and upcase(avisit) in ('DAY 0' 'DAY 1' 'DAY 2' 'DAY 3' 'DAY 4' 'DAY 5') then anl02f1='Y' ;
run;

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*change from baseline;
proc sort data=adpc2;
    by usubjid subjidn paramn avisitn atptn;
run;

data base(rename=(aval=base));
    set adpc2 (where=(ablfl='Y'));
    keep usubjid subjidn paramn aval;
run;

proc sort data=base ;
    by usubjid subjidn paramn;
run;

* here delete one baseline record from the double baselines in sdtm.pc;
data base;
    set base;
    by usubjid subjidn paramn;
    if not first.paramn then delete;
run;

data change;
    merge adpc2 base;
    by usubjid subjidn paramn;
    format chg pchg best. pchgc $20.;
    LENGTH PCREASN2 $200 PCDTC2 $16;
    if nmiss(aval, base)=0 then do;
        chg=aval-base;
        pchg=(aval-base)/base*100;
        pchgc=STRIP(put(round(pchg,0.1),8.1));
    end;

    PCREASN2=PCREASND;
    PCDTC2=PCDTC;

    if subjid='TOK-0146' and ablfl='Y' and aval=33 then ablfl='';

    DROP PCREASND PCDTC;
    RENAME PCREASN2=PCREASND PCDTC2=PCDTC;
run;

*****;
* create output dataset ;
*****;
options replace;

proc sort data = change out=adpc;
/* by usubjid avisitn parcat1n parcat2n;*/
    BY USUBJID AVISITN PARAMCD ATPTN;
run;

%m_chglength(inds=adpc,varlist=PARAMCD AVALC AVALU PCREASND, lenlist= $3 $11 $5 $41);

%m_attrib_adam (dset=ADPC);

data adpc;
    set adpc;
    format _all_;
    format SCRNDT ADT TRTSDT TRTEDT DATE9. AWLO AWHI TRTSDTM TRTEDTM ADTM DATETIME13. ATM time5.;
run;

data adam.adpc (label= 'Pharmacokinetic Concentration Analysis Dataset');
    set adpc;
run;

options noreplace;

proc printto; run;

%m_logchk;

*=====;
* END OF PROGRAM CODE ;
*=====;

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