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*****
** Program Name   : adae-s091-pd2-ped-saf.sas                **
** Date Created  : 24Mar2021                                **
** Programmer Name : (b) (6)                                **
** Purpose       : Create adae-s091-pd2-ped-saf              **
** Input data    : adae                                     **
** Output data   : adae-s091-pd2-ped-saf.html               **
*****
options mprint mlogic symbolgen mprint symbolgen mlogic nocenter missing=" ";

**Setup the environment**
%let prot=/Volumes/app/cdars/prod/sites/cdars4/prjC459/nda2_unblinded_esub/euaext_esub_adam/saseng/cdisc3_0;
libname datvprot "&prot./data_vai" access=readonly;

%let codename=adae-s091-pd2-ped-saf;
%let outlog=&prot./analysis/esub/logs/&codename..log;
%let outtable=&prot./analysis/esub/output/&codename..html;

proc printto log="&outlog." new;
run;

data g_adsl_dsin;
  set datvprot.adsl;

  if trt01an=8 and agegr4n=1 then
    trtarn=1;
  else if trt01an=8 and agegr4n=2 then
    trtarn=2;
  else if trt01an=9 and agegr4n=1 then
    trtarn=3;
  else if trt01an=9 and agegr4n=2 then
    trtarn=4;
  trtar=trt01a;
  where SAFFL eq 'Y' and AGEGR4N ne . and HIVFL ne 'Y' and PEDREAFL='Y' and
    MULENRFL ne "Y";
run;

data g_a_dsin;
  set datvprot.adae;

  if trt01an=8 and agegr4n=1 then
    trtarn=1;
  else if trt01an=8 and agegr4n=2 then
    trtarn=2;
  else if trt01an=9 and agegr4n=1 then
    trtarn=3;
  else if trt01an=9 and agegr4n=2 then
    trtarn=4;
  trtar=trt01a;
  analysis_subset='Y';
  where AECAT='ADVERSE EVENT' and saffl="Y" and MULENRFL ne "Y" and VPHASEN
    in (1, 2) and V01DT >=ASTDT and (UNBLNDDT=. or UNBLNDDT > ASTDT);
run;

```

```

data g_adsl_dsin;
  set g_adsl_dsin;

  if TRTARN in (1) then
    do;
      newtrtn=1;
      newtrt=coalescec("12-15 Years", TRTAR);
      TRTAR="BNT162b2 (30 (*ESC*)){unicode 03BC}g";
      output;
    end;

  if TRTARN in (2) then
    do;
      newtrtn=2;
      newtrt=coalescec("16-25 Years", TRTAR);
      TRTAR="BNT162b2 (30 (*ESC*)){unicode 03BC}g";
      output;
    end;

  if TRTARN in (3) then
    do;
      newtrtn=3;
      newtrt=coalescec("12-15 Years", TRTAR);
      TRTAR="Placebo";
      output;
    end;

  if TRTARN in (4) then
    do;
      newtrtn=4;
      newtrt=coalescec("16-25 Years", TRTAR);
      TRTAR="Placebo";
      output;
    end;
run;

```

```

data g_a_dsin;
  set g_a_dsin;

  if TRTARN in (1) then
    do;
      newtrtn=1;
      newtrt=coalescec("12-15 Years", TRTAR);
      TRTAR="BNT162b2 (30 (*ESC*)){unicode 03BC}g";
      output;
    end;

  if TRTARN in (2) then
    do;
      newtrtn=2;
      newtrt=coalescec("16-25 Years", TRTAR);
      TRTAR="BNT162b2 (30 (*ESC*)){unicode 03BC}g";
      output;
    end;

```

```

end;

if TRTARN in (3) then
do;
newtrtn=3;
newtrt=coalescec("12-15 Years", TRTAR);
TRTAR="Placebo";
output;
end;

if TRTARN in (4) then
do;
newtrtn=4;
newtrt=coalescec("16-25 Years", TRTAR);
TRTAR="Placebo";
output;
end;

run;

proc format;
value catlbl 1="Any event" 2="Any serious adverse event" 3="Severe"
4="Related(*ESC*){super c}" 5="Life-threatening"
6="Any adverse event leading to withdrawal" 7="Death";
value scatlbl 101, 102, 106="Related(*ESC*){super c}" 201, 202, 206="Severe"
301, 302, 306="Life-threatening";
value $sex "M"="Male" "F"="Female";
run;

proc sort data=g_adsl_dsin out=_ds1;
by usubjid newtrtn;
run;

proc sort data=g_a_dsin out=_ds2;
by usubjid newtrtn;
run;

data final;
merge _ds1(in=d1) _ds2(in=d2);
by usubjid newtrtn;

if d1;

proc sort;
by newtrtn usubjid;
run;

data final_;
set final;
by newtrtn usubjid;
_uniqid=_n_;
run;

data _data1;
set final_;

```

```

where (NEWTRTN is not missing);

proc sort;
  by NEWTRTN USUBJID;
run;

data _data1;
  retain _trt 0;
  length _str $200;
  _datasrt=1;
  set _data1 end=eof;
  by NEWTRTN USUBJID;
  drop _str;
  _str='';
  _lastby=1;
  _dummyby=0;

  if first.NEWTRTN then
    do;

      if not missing(NEWTRTN) then
        do;
          _trt=_trt + 1;
          end;
          _str=NEWTRT;
        end;
    end;
run;

proc sql;
  create table trtbign as select distinct _trt, newtrt, trtar,
    compress(put(count(*), 5.) ) as bign from (select distinct USUBJID, _trt,
    newtrt, trtar from _data1 where NEWTRTN is not missing) group by _trt;
quit;

proc sort data=_data1 out=_bydat1(keep=_datasrt _dummyby) nodupkey;
  by _datasrt;
run;

data _bydat1;
  set _bydat1 end=eof;
  by _datasrt;
  retain _preby 0;
  drop _preby;
  _byvar1=0;

  if eof then
    do;
      call symput("_preby1", compress(put(_byvar1, 4.)));

      if 0=0 then
        output;
      end;
    end;
run;

```

```

data _bydat1;
  set _bydat1;
  by _datasrt;
  length _bycol _byindnt $50 _bylast $10;
  _bycol=" ";
  _byindnt=" ";
  _bylast=" ";

proc sort;
  by _datasrt;
run;

proc sort data=_data1;
  by _trt usubjid aterm descending ATOXGRN;
run;

data tab1;
  set _data1;
  where analysis_subset='Y' and aterm ne " ;
  by _trt usubjid aterm descending ATOXGRN;

  if last.usubjid then
    do;
      catvar=1;
      output;
    end;

  if last.ATOXGRN then
    do;
      _catvar=1;
      output;
    end;
run;

data rel_tab1;
  set _data1;
  by _trt usubjid aterm descending ATOXGRN;
  where analysis_subset='Y' and aterm ne " and upcase(AREL)='RELATED';

  if last.usubjid then
    do;
      catvar=1+100;
      output;
    end;

  if last.ATOXGRN then
    do;
      _catvar=1+100;
      output;
    end;
run;

data sev_tab1;
  set _data1;

```

```
by _trt usubjid aeterm descending ATOXGRN;  
where analysis_subset='Y' and aeterm ne " and ATOXGRN=3;
```

```
if last.usubjid then  
do;  
catvar=1+200;  
output;  
end;
```

```
if last.ATOXGRN then  
do;  
_catvar=1+200;  
output;  
end;
```

```
run;
```

```
data lif_tab1;  
set _data1;  
by _trt usubjid aeterm descending ATOXGRN;  
where analysis_subset='Y' and aeterm ne " and (atoxgr="GRADE 4");
```

```
if last.usubjid then  
do;  
catvar=1+300;  
output;  
end;
```

```
if last.ATOXGRN then  
do;  
_catvar=1+300;  
output;  
end;
```

```
run;
```

```
data tab2;  
set _data1;  
where analysis_subset='Y' and aeser='Y';  
by _trt usubjid aeterm descending ATOXGRN;
```

```
if last.usubjid then  
do;  
catvar=2;  
output;  
end;
```

```
if last.ATOXGRN then  
do;  
_catvar=2;  
output;  
end;
```

```
run;
```

```
data rel_tab2;  
set _data1;
```

```
by _trt usubjid aeterm descending ATOXGRN;  
where analysis_subset='Y' and aeser='Y' and upcase(AREL)='RELATED';
```

```
if last.usubjid then  
  do;  
    catvar=2+100;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=2+100;  
    output;  
  end;
```

```
run;
```

```
data sev_tab2;  
  set _data1;  
  by _trt usubjid aeterm descending ATOXGRN;  
  where analysis_subset='Y' and aeser='Y' and ATOXGRN=3;
```

```
if last.usubjid then  
  do;  
    catvar=2+200;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=2+200;  
    output;  
  end;
```

```
run;
```

```
data lif_tab2;  
  set _data1;  
  by _trt usubjid aeterm descending ATOXGRN;  
  where analysis_subset='Y' and aeser='Y' and (atoxgr="GRADE 4");
```

```
if last.usubjid then  
  do;  
    catvar=2+300;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=2+300;  
    output;  
  end;
```

```
run;
```

```
data tab6;  
  set _data1;
```

```
where analysis_subset='Y' and (upcase(aeacn)='DRUG WITHDRAWN' or aesubjdc='Y');  
by _trt usubjid aeterm descending ATOXGRN;
```

```
if last.usubjid then  
  do;  
    catvar=6;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=6;  
    output;  
  end;
```

```
run;
```

```
data rel_tab6;  
  set _data1;  
  by _trt usubjid aeterm descending ATOXGRN;  
  where analysis_subset='Y' and (upcase(aeacn)='DRUG WITHDRAWN' or aesubjdc='Y')  
    and upcase(AREL)='RELATED';
```

```
if last.usubjid then  
  do;  
    catvar=6+100;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=6+100;  
    output;  
  end;
```

```
run;
```

```
data sev_tab6;  
  set _data1;  
  by _trt usubjid aeterm descending ATOXGRN;  
  where analysis_subset='Y' and (upcase(aeacn)='DRUG WITHDRAWN' or aesubjdc='Y')  
    and ATOXGRN=3;
```

```
if last.usubjid then  
  do;  
    catvar=6+200;  
    output;  
  end;
```

```
if last.ATOXGRN then  
  do;  
    _catvar=6+200;  
    output;  
  end;
```

```
run;
```



```
data lif_tab6;
  set _data1;
  by _trt usubjid aeterm descending ATOXGRN;
  where analysis_subset='Y' and (upcase(aeacn)='DRUG WITHDRAWN' or aesubjdc='Y')
    and (atoxgr="GRADE 4");
```

```
  if last.usubjid then
    do;
      catvar=6+300;
      output;
    end;
```

```
  if last.ATOXGRN then
    do;
      _catvar=6+300;
      output;
    end;
```

```
run;
```

```
data tab7;
  set _data1;
  where analysis_subset='Y' and (upcase(AEOUT)="FATAL");
  by _trt usubjid aeterm descending ATOXGRN;
```

```
  if last.usubjid then
    do;
      catvar=7;
      output;
    end;
```

```
  if last.ATOXGRN then
    do;
      _catvar=7;
      output;
    end;
```

```
run;
```

```
data rel_tab7;
  set _data1;
  by _trt usubjid aeterm descending ATOXGRN;
  where analysis_subset='Y' and (upcase(AEOUT)="FATAL") and
    upcase(AREL)='RELATED';
```

```
  if last.usubjid then
    do;
      catvar=7+100;
      output;
    end;
```

```
  if last.ATOXGRN then
    do;
      _catvar=7+100;
      output;
    end;
```

```

run;

data sev_tab7;
  set _data1;
  by _trt usubjid aeterm descending ATOXGRN;
  where analysis_subset='Y' and (upcase(AEOUT)="FATAL") and ATOXGRN=3;

  if last.usubjid then
    do;
      catvar=7+200;
      output;
    end;

  if last.ATOXGRN then
    do;
      _catvar=7+200;
      output;
    end;
run;

data lif_tab7;
  set _data1;
  by _trt usubjid aeterm descending ATOXGRN;
  where analysis_subset='Y' and (upcase(AEOUT)="FATAL") and (atoxgr="GRADE 4");

  if last.usubjid then
    do;
      catvar=7+300;
      output;
    end;

  if last.ATOXGRN then
    do;
      _catvar=7+300;
      output;
    end;
run;

data _data1;
  set _data1(in=a) tab1 sev_tab1 rel_tab1 lif_tab1 tab2 sev_tab2 rel_tab2
    lif_tab2 tab6 sev_tab6 rel_tab6 lif_tab6 tab7;

  if a then
    do;
      catvar=0;
      _catvar=0;
    end;

  if _catvar ne . then
    catvar=.;
run;

proc format cntlout=tmpfmt;
  select catlbl;

```

```

run;

data _anall;
  length CATVAR 8;
  set _data1;
  where same and CATVAR is not missing;
  _blcksrt=0;
  _cnt=1;
  _cat=1;

  if _trt <=0 then
    delete;
  output;
run;

proc sort data=_anall;
  by _datasrt _blcksrt CATVAR _trt _cat;
run;

proc sort data=_anall out=_temp91 nodupkey;
  by _datasrt _blcksrt _cat CATVAR _trt USUBJID;
run;

proc freq data=_temp91;
  format CATVAR;
  tables _datasrt*_blcksrt*_cat * CATVAR * _trt / sparse norow nocol nopercnt
  out=_pct1(drop=percent);
run;

Data temp;
  catvar=1;
  output;
  catvar=101;
  output;
  catvar=201;
  output;
  catvar=301;
  output;
  catvar=2;
  output;
  catvar=102;
  output;
  catvar=202;
  output;
  catvar=302;
  output;
  catvar=6;
  output;
  catvar=106;
  output;
  catvar=206;
  output;
  catvar=306;
  output;

```

```

catvar=7;
output;
run;

proc sql;
  create table temp2 as select distinct a._datasrt , a._blcksrt, a._cat, a._trt,
    b.* from _pct1 as a left join temp as b on 1;
quit;

proc sql;
  create table _pct2 as select a.*, coalesce(b.count, 0) as count from temp2 as
    a left join _pct1 as b on a._datasrt=b._datasrt and a._blcksrt=b._blcksrt and
    a._cat=b._cat and a._trt=b._trt and a.catvar=b.catvar;
quit;

data rep1;
  set _pct2;
  length _rwlabel $200. _cvalue $50.;

  if catvar<100 then
    do;
      _rwlabel=strip(put(CATVAR, catlbl.));

      /* grp=1; */
    end;
  else
    do;
      _rwlabel=repeat(byte(160), 2)|| strip(put(CATVAR, scatlbl.));

      /* grp=2; */
    end;

  if catvar in (1, 101, 201, 301) then
    _fixvar=1;
  else if catvar in (2, 102, 202, 302) then
    _fixvar=2;
  else if catvar in (6, 106, 206, 306) then
    _fixvar=3;
  else if catvar in (7) then
    _fixvar=4;
  _cvalue=strip(put(count, best.));
run;

proc sql;
  create table rep2 as select a.*, b.bign, b.newtrt, b.trtar from rep1 as a left
    join trtbign as b on a._trt=b._trt;
quit;

data rep2;
  set rep2;
  length _cpct $40.;

  if bign>0 then
    do;

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percent=count / bign * 100;

if percent > 0 then
do;

    if round(percent, 0.1) GE 0.1 then
        _cpct="(*ESC*){nbspspace 1}("||strip(put(percent, 5.1))||")";
    else
        _cpct="(*ESC*){nbspspace 1}{(0.0)";
        _cvalue=trim(_cvalue)||_cpct;
    end;
end;

newtrt=strip(newtrt)||"|" (N(*ESC*){super a}="||strip(bign)||")";
_dummy=1;

proc sort;
    by _cat _fixvar catvar _rwlabel _trt trtar newtrt _cvalue;
run;

options topmargin=0.75in bottommargin=0.75in leftmargin=0.75in
    rightmargin=0.75in;
;
options orientation=LANDSCAPE papersize="LETTER";
ods escapechar="~";
option nobyline;
title1 "Number (%) of Subjects Reporting at Least 1 Adverse Event From Dose 1 Through 1 Month After Dose 2
(*ESC*){unicode 2013} ";
title2 "Subjects 12 Through 15 and 16 Through 25 Years of Age (Reactogenicity Subset) (*ESC*){unicode 2013}
Safety Population ";
footnote1 "Note: Adverse events that occurred on the day of or after subjects were unblinded are excluded from this
summary.";
footnote2 "Note: This table includes all subjects 12 through 15 years of age (all of whom are in the reactogenicity
subset) and the subset of subjects 16 through 25 years of age who received an electronic diary (e-diary).";
footnote3 "%nrbquote(a.~{nbspspace 5}N = number of subjects in the specified group. This value is the denominator for
the percentage calculations.);";
footnote4 "%nrbquote(b.~{nbspspace 5}n = Number of subjects reporting at least 1 occurrence of the specified event
category. For "any
    event,
    " n = number of subjects reporting at least 1 occurrence of any event.);";
footnote5 "%nrbquote(c.~{nbspspace 5}Assessed by the investigator as related to investigational product.);";
ods html file="&outtable.";

proc report data=rep2 nowd list missing contents="" split="|";
    column _cat _fixvar catvar
        _rwlabel ("~S={just=center} Vaccine Group (as Administered)~{line}" trtar,
        (newtrt, (_cvalue _dummy)));
    define _cat / group noprint;
    define _fixvar / group order=internal noprint;
    define catvar / group order=internal noprint;
    define _rwlabel / group "Adverse Event" order=data style(column)={just=left
        width=65mm} style(header)={just=left} left;
    define newtrt / across nozero "" style(column)={width=35mm leftmargin=12px}
        style(header)={just=center} center;
    define trtar / across nozero "" style(column)={width=35mm leftmargin=12px}

```

```

    style(header)={just=center} center;
define _cvalue / display nozero "n(*ESC*){super b} (%)"
    style(column)={width=35mm leftmargin=12px} style(header)={just=center} center;
define _dummy / sum noprint;
compute before _cat;
    line @1 " ~n";
endcomp;
compute after _cat;
    line " ~n";
endcomp;
run;

ods html close;

proc printto;
run;

```