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/*****
* Project       : ZRHM-REXA-07-JP
* Program name  : T15020625_ZRHM_REXA_07_JP_V1.sas
* Author       : C. Liu
* Date created  : 06/12/2015
* Purpose       : Summary of Cough Assessments Over Study T Safety Population
* Revision History
* Date         Author      Ref      Revision
* 07/02/2015   C. Liu      Per Client's comments
*****/

%let prgname=T15020625_ZRHM_REXA_07_JP_V1;

options sasautos=("W:\pmp07\macros" sasautos) notes;
%init(delivery=9);

%titlecsv(prgname=&prgname.,version=3);

%put &title1;
%put &title2;
%put &APPENDIX;
%put &endpoint;
%put &outname.;

options missing="";

title;
footnote;

proc format;
  value paramf
    1 = 'Has subject experienced cough in the study period assessed'
    3 = 'Intensity of cough'
    4 = 'Frequency of cough'
    5 = 'Amount of sputum produced'
  ;
run;

data adsl;
  set adam.adsl;
  if trt01an=3 then trt01an=6;
  if safbfl='Y' then do;
    period=1;
    output;
    trt01an=99;
    output;
  end;
  rename trt01an=trtan;
run;

data adsl;
  set adsl;
  output;
  if safaf1='Y' then do;
    period=2;
    output;
  end;
run;

proc sql noprint;
  select n(usubjid) into :n1-:n5
  from adsl
  where period=1
  group by trtan;
quit;

proc sql noprint;
  select n(usubjid) into :n6-:n9
  from adsl
  where period=2
  group by trtan;
quit;

proc freq data=adsl noprint;
  table period*trtan/out=freqn;
run;

/* Per Client's comment: For the pre-randomization period, we should count subjects and events only based on
the assessments at Day 0 and Day 1.
For the randomization period, we should count subjects and events for the assessments
at Day 2-6
*/
data adqs;
  set adam.adqssym(where=(safbfl='Y' and paramn not in (2 99) and .<avisitn<=106));
  if trtan=3 then trtan=6;
  if avisitn in (100 101) then period=1;
  else if avisitn>101 then period=2;

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    if paramn=1 then do;
        if avalc='N' then aval=1;
    else if avalc='Y' then aval=2;
    end;
    output;
    trtan=99;
    output;
run;

proc sort data=adqs;
    by usubjid trtan period paramn param avisitn avisit aval;
run;

data adqs1;
    set adqs;
    by usubjid trtan period paramn param avisitn avisit aval;
    if last.avisit;
run;

/* Subject level: Pick the worst case per period/subject/param */
proc sort data=adqs1;
    by usubjid trtan period paramn param aval;
run;

data adqs2;
    set adqs1;
    by usubjid trtan period paramn param aval;
    if last.param;
run;

/***** Subject Level *****/
/* Subjects who ever coughed during period */
data adqs2_;
    merge adqs2(where=(paramn=1) in=a) adsl(keep=usubjid trtan period in=b);
    by usubjid trtan period;
    if b and not a then do;
        paramn=1; aval=3; avalc='Missing';
    end;
run;

proc freq data=adqs2_ noprint;
    table period*paramn*param*trtan*aval*avalc/out=freq1;
run;

proc sql;
    create table freq2 as
    select a.*, strip(put(a.count,8.0))||' ('||strip(put(100*a.count/b.count,4.1))||')' as result length=20
    from freq1 a, freqn b
    where a.period=b.period and a.trtan=b.trtan
    order by period, paramn, param, aval, avalc;
quit;

proc transpose data=freq2 out=freq3 prefix=subj;
    by period paramn param aval avalc;
    id trtan;
    var result;
run;

proc freq data=adqs2(where=(paramn=1 and avalc='Y')) noprint;
    table period*trtan/out=freq0;
run;

proc freq data=adqs2(where=(paramn>1)) noprint;
    table period*paramn*param*trtan*aval*avalc/out=freq4;
run;

proc sql;
    create table freq5 as
    select a.*, strip(put(a.count,8.0))||' ('||strip(put(100*a.count/b.count,4.1))||')' as result length=20
    from freq4 a, freq0 b
    where a.period=b.period and a.trtan=b.trtan
    order by a.period, a.paramn, a.param, aval, avalc;
quit;

proc transpose data=freq5 out=freq6 prefix=subj;
    by period paramn param aval avalc;
    id trtan;
    var result;
run;

data allsubj;
    set freq3 freq6;
    by period paramn param;
run;

proc sort;
    by period paramn param aval avalc;

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run;

proc transpose data=freq0 out=t_freq0;
  by period;
  id trtan;
  var count;
run;

data t_freq0;
  set t_freq0;

  length avalc $50;
  if period=1 then do;
    paramn=3; aval=-1; avalc="n"; output;
    paramn=4; aval=-1; avalc="n"; output;
    paramn=5; aval=-1; avalc="n"; output;
  end;
  else if period=2 then do;
    paramn=3; aval=-1; _96=.; avalc="n"; output;
    paramn=4; aval=-1; avalc="n"; output;
    paramn=5; aval=-1; avalc="n"; output;
  end;
run;

data allsubj;
  set allsubj t_freq0(in=b);

  if b then do;
    subj4=put(_4,8.0);
    subj5=put(_5,8.0);
    subj6=put(_6,8.0);
    subj96=put(_96,8.0);
    subj99=put(_99,8.0);
  end;
run;

proc sort;
  by period paramn param aval avalc;
run;

/***** Event Level *****/

proc freq data=adqs1 noprint;
  table period*paramn*param*trtan*aval*avalc/out=freq7;
run;

proc sort data=freq7;
  by period paramn param aval avalc;
run;

proc transpose data=freq7 out=freq8 prefix=evnt;
  by period paramn param aval avalc;
  id trtan;
  var count;
run;

data all;
  merge allsubj freq8;
  by period paramn param aval avalc;

  if avalc='Y' then do;
    aval=1; avalc='Yes';
  end;
  else if avalc='N' then do;
    aval=2; avalc='No';
  end;
  if paramn=1 and aval=3 then do;
    if subj4 ne '' then evnt4=input(scan(subj4,1,' '),8.0);
    if subj5 ne '' then evnt5=input(scan(subj5,1,' '),8.0);
    if subj6 ne '' then evnt6=input(scan(subj6,1,' '),8.0);
    if subj96 ne '' then evnt96=input(scan(subj96,1,' '),8.0);
    if subj99 ne '' then evnt99=input(scan(subj99,1,' '),8.0);
  end;
run;

proc sort;
  by period paramn aval avalc;
run;

%macro shell;
  paramn=1; aval=1; avalc='Yes'; output;
  aval=2; avalc='No'; output;
  paramn=3; aval=1; avalc='Very mild'; output;
  aval=2; avalc='Mild'; output;
  aval=3; avalc='Moderate'; output;
  aval=4; avalc='Severe'; output;
  aval=5; avalc='Very severe'; output;

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paramn=4; aval=1; avalc='Rarely'; output;
aval=2; avalc='Sometimes'; output;
aval=3; avalc='Fairly often'; output;
aval=4; avalc='Often'; output;
aval=5; avalc='Almost always'; output;
paramn=5; aval=0; avalc='No sputum'; output;
aval=1; avalc='A moderate amount of sputum'; output;
aval=2; avalc='A larger amount of sputum'; output;
aval=3; avalc='A very large amount of sputum'; output;
%mend shell;

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data shell;
  length avalc $200;
  period=1;
  %shell
  period=2;
  %shell
run;

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proc sort data=shell;
  by period paramn aval avalc;
run;

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data final;
  merge shell(in=a) all;
  by period paramn aval avalc;

  array colsubj subj4 subj5 subj6 subj96 subj99;
  array colevnt evnt4 evnt5 evnt6 evnt96 evnt99;

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  do i=1 to dim(colsubj);
    if colsubj(i)='' then colsubj(i)='0';
    if colevnt(i)=. then colevnt(i)=0;
  end;

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  drop _: i;
run;

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/*for QC purpose*/
data odata.t15020625;
  set final;
run;

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data final;
  set final;
  by period paramn aval avalc;
  array colsubj subj4 subj5 subj6 subj96 subj99;
  array colevnt evnt4 evnt5 evnt6 evnt96 evnt99;

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  avalc="^R/RTF' ' "||left(avalc);
  output;

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  if last.paramn then do;
    do i=1 to dim(colsubj);
      colsubj(i)=''; colevnt(i)=.;
    end;
    aval=-2; avalc=''; avalc=put(paramn,paramf.);
    output;
  end;
run;

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proc sort data=final;
  by period paramn aval;
run;

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data final;
  set final;
  by period paramn aval;
  retain _page 1;
  if first.paramn then _c+1;
  if _c=3 then do;
    _page+1;
    _c=1;
  end;
  drop _c;
run;

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proc sort data=final;
  by _page;
run;

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%global totalpage;

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data _null_;
  set final end=eof;

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  if eof then do;

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        call symput('totalpage', trim(left(put(_page,8)))));
    end;
run;

%put totalpage=&totalpage;

%trtrtfpg(pgmname=&outname., pgmid=1, new=0, style=, bookmark=%lowercase(&outname.));

%macro reppart;

    %do i = 1 %to 2;

proc report data=final headskip headline spacing=4 nowd split='+' style=[outputwidth=100%]
    style(header column)=[protectspecialchars=off];
    columns _page paramn aval ('^S={just=l}Variable' avalc)
        ("^R'\brdrb\brdrs 'THSm2.2+(N=%cmpres(&n1))" ("^S={just=c}n (%)" subj4) ("^S={just=c}Events" evtnt4))
        ("^R'\brdrb\brdrs 'mCC+(N=%cmpres(&n2))" ("^S={just=c}n (%)" subj5) ("^S={just=c}Events" evtnt5))
        ("^R'\brdrb\brdrs 'SA+(N=%cmpres(&n3))" ("^S={just=c}n (%)" subj6) ("^S={just=c}Events" evtnt6))
        ("^R'\brdrb\brdrs 'Product Test+(N=%cmpres(&n4))" ("^S={just=c}n (%)" subj96) ("^S={just=c}Events" evtnt96))
        ("^R'\brdrb\brdrs 'Overall Safety+(N=%cmpres(&n5))" ("^S={just=c}n (%)" subj99) ("^S={just=c}Events" evtnt99
))
;

    where period=1 and _page =&i.;

    define _page/group order=internal noprint;
    define paramN/group order=internal noprint;
    define AVal/group order=internal noprint;
    define avalc/group ' ' order=internal style(column)=[cellwidth=15% just=l];
    define subj4/display ' ' style(column)=[just=c cellwidth=4%];
    define evtnt4/display ' ' style(column)=[just=c cellwidth=4%];
    define subj5/display ' ' style(column)=[just=c cellwidth=4%];
    define evtnt5/display ' ' style(column)=[just=c cellwidth=4%];
    define subj6/display ' ' style(column)=[just=c cellwidth=4%];
    define evtnt6/display ' ' style(column)=[just=c cellwidth=4%];
    define subj96/display ' ' style(column)=[just=c cellwidth=4%];
    define evtnt96/display ' ' style(column)=[just=c cellwidth=4%];
    define subj99/display ' ' style(column)=[just=c cellwidth=5%];
    define evtnt99/display ' ' style(column)=[just=c cellwidth=4%];

    compute after paramN;
        line ' ';
    endcomp;
    break after _page/page;

compute before _page;
line @1 "";
endcomp;

compute before _page_ /style=[fontweight=bold fontsize=3.75];
line @1 "&title1 &title2";
line @1 "^R/RTF'\brdrb\brdrs\brdrw30\brsp20\b ' ";
line @1 "Safety Time Period: Pre-Randomization";
endcomp;

compute after _page_/style=[fontsize=1.75];
line @1 "Note: ||Product Test= refers to all subjects who tested the THS product but were not randomized. The Overall Saf
ety refers to all subjects exposed to THSm2.2.";
line @1 "Note: mCC = Menthol conventional cigarettes; SA = Smoking abstinence; THSm2.2 = Tobacco Heating System 2.2 Ment
hol.";
line @1 "Note: Percentages for 'Has the subject experienced a cough' are based on the number of subjects indicated in th
e column header (N). Percentages for";
line @1 "intensity of cough are based on the number of subjects who have experienced a cough.";
line @1 "Note: Cough experienced in the previous 24h by the subjects is assessed in the morning of Day 0 to Day 6. If su
bject has answered question more than once";
line @1 "then the most severe intensity is presented.";
line @1 " ";
line @1 "&APPENDIX.";
line @1 "Study ID:ZRHM-REXA-07-JP          Program: &fprgname..sas          Status: &repversion./&fdate.
        Page: &i. of &totalpage";
endcomp;
run;
%end;

    %do i = 3 %to &totalpage;

proc report data=final headskip headline spacing=4 nowd split='+' style=[outputwidth=100%]
    style(header column)=[protectspecialchars=off];
    columns _page paramn aval ('^S={just=l}Variable' avalc)
        ("^R'\brdrb\brdrs 'THSm2.2+(N=%cmpres(&n6))" ("^S={just=c}n (%)" subj4) ("^S={just=c}Events" evtnt4))
        ("^R'\brdrb\brdrs 'mCC+(N=%cmpres(&n7))" ("^S={just=c}n (%)" subj5) ("^S={just=c}Events" evtnt5))
        ("^R'\brdrb\brdrs 'SA+(N=%cmpres(&n8))" ("^S={just=c}n (%)" subj6) ("^S={just=c}Events" evtnt6))
        ("^R'\brdrb\brdrs 'Overall Safety+(N=%cmpres(&n9))" ("^S={just=c}n (%)" subj99) ("^S={just=c}Events" evtnt99
))
;

    where period=2 and _page =&i.;

    define _page/group order=internal noprint;

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define paramN/group order=internal noprint;
define AVal/group order=internal noprint;
define avalc/group ' ' order=internal style(column)=[cellwidth=15% just=1];
define subj4/display ' ' style(column)=[just=c cellwidth=4%];
define evnt4/display ' ' style(column)=[just=c cellwidth=4%];
define subj5/display ' ' style(column)=[just=c cellwidth=4%];
define evnt5/display ' ' style(column)=[just=c cellwidth=4%];
define subj6/display ' ' style(column)=[just=c cellwidth=4%];
define evnt6/display ' ' style(column)=[just=c cellwidth=4%];
define subj99/display ' ' style(column)=[just=c cellwidth=5%];
define evnt99/display ' ' style(column)=[just=c cellwidth=4%];

compute after paramN;
  line ' ';
endcomp;
break after _page/page;

compute before _page;
line @1 "";
endcomp;

compute before _page_ /style=[fontweight=bold fontsize=3.75];
line @1 "&title1 &title2";
line @1 "^R/RTF'\brdrb\brdrs\brdrw30\brsp20\b ' ";
line @1 "Safety Time Period: Randomized Period";
endcomp;

compute after _page_ /style=[fontsize=1.75];
line @1 "Note: ||Product Test= refers to all subjects who tested the THS product but were not randomized. The Overall Safety refers to all subjects exposed to THSm2.2.";
line @1 "Note: mCC = Menthol conventional cigarettes; SA = Smoking abstinence; THSm2.2 = Tobacco Heating System 2.2 Menthol.";
line @1 "Note: Percentages for 'Has the subject experienced a cough' are based on the number of subjects indicated in the column header (N). Percentages for";
line @1 "intensity of cough are based on the number of subjects who have experienced a cough.";
line @1 "Note: Cough experienced in the previous 24h by the subjects is assessed in the morning of Day 0 to Day 6. If subject has answered question more than once";
line @1 "then the most severe intensity is presented.";
line @1 " ";
line @1 "&APPENDIX.";
line @1 "Study ID:ZRHM-REXA-07-JP          Program: &fprgname..sas          Status: &repversion./&fdate.
      Page: &i. of &totalpage";
endcomp;
run;
%end;
%mend;
%reppart;

ods listing;
ods rtf close;

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