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/*=====
*Covance Study ID      : 000000106343
*Program Name          : t_prduse_prdcat_fas.sas
*Purpose               : Summary of Product Use by Product Use Category in Ambulatory Period - FAS
                        Table 15.2.2.4
*Input Data            : adam.adsl
*Output Data           : tflds.T_15_02_02_04
*Macros Called         : %m_printto, %mmcmt, %outrtf, %m_logchk
*Programmed by        : L.Ma
*Creation Date         : 2015-05-26
*=====
*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;

*read in data;
data adsl;
  set adam.adsl(where=(fasfl ='Y'));
  if trt01an=4 then trt=1;
  else if trt01an=5 then trt=2;
  else if trt01an=3 then trt=3;
run;

*macro for each period;
%macro mmcmt (gpucat=, pucat=, pucatex=, out=);
data adsl1;
  set adsl;

  length stat $40;
  label stat='Product Use Category';

  *create stat and order variable per mockup;
  if trt=1 then do;
    *Main-categories;
    if &gpucat.='THS 2.2' then do; stat='THSm2.2 ([70-100]%)'; order=1; output; end;
    else if &gpucat.='Dual' then do; stat='Dual ([30-70]%)'; order=5; output; end;
    else if &gpucat.='CC' then do; stat='CC ([0-30]%)'; order=9; output; end;
    else if &gpucat.='Abstinent' then do; stat='Abstinent'; order=13; output; end;
    else if &gpucat.='Predominantly Abstinent' then do; stat='Predominantly Abstinent'; order=14; output; end;
    else if &gpucat.='Not Abstinent' then do; stat='Not Abstinent'; order=15; output; end;
    else if &gpucat.='Missing' then do; stat='Missing'; order=17; output; end;

    *sub-categories under each main-categories;
    if &gpucat.='THS 2.2' and &pucat.='Primarily THS 2.2' then do; stat='Primarily THSm2.2 ([95-100]%)'; order=2; output; end;
    else if &gpucat.='THS 2.2' and &pucat.='Predominantly THS 2.2' then do; stat='Predominantly THSm2.2 ([70-95]%)'; order=4; output;
end;
    else if &gpucat.='Dual' and &pucat.='Dual Mostly THS 2.2' then do; stat='Dual mostly THSm2.2 ([60-70]%)'; order=6; output; end;
    else if &gpucat.='Dual' and &pucat.='Dual Balanced' then do; stat='Dual balanced ([40-60]%)'; order=7; output; end;
    else if &gpucat.='Dual' and &pucat.='Dual Mostly CC' then do; stat='Dual mostly CC ([30-40]%)'; order=8; output; end;
    else if &gpucat.='CC' and &pucat.='Predominantly CC' then do; stat='Predominantly CC ([5-30]%)'; order=10; output; end;
    else if &gpucat.='CC' and &pucat.='Primarily CC' then do; stat='Primarily CC ([0-5]%)'; order=11; output; end;

    if &pucatex.='Exclusively THS 2.2' then do; stat='Exclusively THSm2.2 (100%)'; order=3; output; end;
    else if &pucatex.='Exclusively CC' then do; stat='Exclusively CC (0%)'; order=12; output; end;
  end ;
  *for trt=2 and 3, main categories=sub-categories, so no need to seperate them;
  else if trt=2 then do;
    if &gpucat.='CC' and &pucat.='CC Only' then do; stat='CC Only (Exclusively CC)'; order=18; output; end ;
    else if &gpucat.='CC' and &pucat.='CC Dual' then do; stat='CC Dual (Use of other products)'; order=19; output; end ;
    else if &gpucat.='Missing' and &pucat.='Missing' then do; stat='Missing'; order=21; output; end ;
  end ;
  else if trt=3 then do;
    if &gpucat.='Abstinent' and &pucat.='Abstinent' then do; stat='Abstinent'; order=22; output; end ;
    else if &gpucat.='Predominantly Abstinent' and &pucat.='Predominantly Abstinent' then do; stat='Predominantly Abstinent'; order=2
3; output; end ;
    else if &gpucat.='Not Abstinent' and &pucat.='Not Abstinent' then do; stat='Not Abstinent'; order=24; output; end ;
    else if &gpucat.='Missing' and &pucat.='Missing' then do; stat='Missing'; order=26; output; end ;
  end ;
run;

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proc freq data=ads11;
  tables trt*stat*order/noprint out=ss(rename=(count=p) drop=percent);
run;

*get big N for the periods for each arm;
Proc sql;
  select sum(p) into :ths_p
  from ss
  where trt=1 and order in (1 5 9 13 14 15 17) ;

  select sum(p) into :mCC_p
  from ss
  where trt=2;

  select sum(p) into :SA_p
  from ss
  where trt=3;
quit;

data fin;
  set ss;
  if trt=1 then do;
    if nmiss(p) =0 then pc=strip(put(p, best.)) || '(' || strip(put((p*100)/&ths_p, 8.1)) || ');';
  end;
  else if trt=2 then do;
    if nmiss(p) =0 then pc=strip(put(p, best.)) || '(' || strip(put((p*100)/&mcc_p, 8.1)) || ');';
  end;
  else if trt=3 then do;
    if nmiss(p) =0 then pc=strip(put(p, best.)) || '(' || strip(put((p*100)/&sa_p, 8.1)) || ');';
  end;
  drop p;
run;

*add arm row per mockup;
data fin1;
  set fin end=eof;
  output;
  if eof then do;
    stat='THSm2.2 Arm';
    pc=strip(put(&ths_p., best.));
    trt=1;
    order=0;
    output;
    stat='mCC Arm';
    pc=strip(put(&mcc_p., best.));
    trt=2;
    order=17.5;
    output;
    stat='SA Arm';
    pc=strip(put(&sa_p., best.));
    trt=3;
    order=21.5;
    output;
  end ;
run;

proc sort data=fin1 ;
  by trt order stat;
run;

data dum;
  length stat $40;
  order=0; trt=1; stat="THSm2.2 Arm"; output;
  order=1; trt=1; stat="THSm2.2 ([70-100]%)"; output;
  order=2; trt=1; stat="Primarily THSm2.2 ([95-100]%)"; output;
  order=3; trt=1; stat="Exclusively THSm2.2 (100%)"; output;
  order=4; trt=1; stat="Predominantly THSm2.2 ([70-95]%)"; output;
  order=5; trt=1; stat="Dual ([30-70]%)"; output;
  order=6; trt=1; stat="Dual mostly THSm2.2 ([60-70]%)"; output;
  order=7; trt=1; stat="Dual balanced ([40-60]%)"; output;
  order=8; trt=1; stat="Dual mostly CC ([30-40]%)"; output;
  order=9; trt=1; stat="CC ([0-30]%)"; output;
  order=10; trt=1; stat="Predominantly CC ([5-30]%)"; output;
  order=11; trt=1; stat="Primarily CC ([0-5]%)"; output;
  order=12; trt=1; stat="Exclusively CC (0%)"; output;
  order=13; trt=1; stat="Abstinent"; output;
  order=14; trt=1; stat="Predominantly Abstinent"; output;

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order=15; trt=1; stat="Not Abstinent"; output;
order=17; trt=1; stat="Missing"; output;

order=17.5; trt=2; stat="mCC Arm"; output;
order=18; trt=2; stat="CC Only (Exclusively CC)"; output;
order=19; trt=2; stat="CC Dual (Use of other products)"; output;
order=21; trt=2; stat="Missing"; output;

order=21.5; trt=3; stat="SA Arm"; output;
order=22; trt=3; stat="Abstinent"; output;
order=23; trt=3; stat="Predominantly Abstinent"; output;
order=24; trt=3; stat="Not Abstinent"; output;
order=26; trt=3; stat="Missing"; output;
run;

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proc sort data=dum ;
  by trt order stat;
run;

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data &out.;
  merge dum(in=a) fin1;
  by trt order stat;
  if a;
run;
%mend mmcmt;

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%mmcnt(gpucat=gpucat2, pucat=pucat2, pucatex=pucat2ex, out=p2);
%mmcnt(gpucat=gpucat3, pucat=pucat3, pucatex=pucat3ex, out=p3);
%mmcnt(gpucat=gpucat4, pucat=pucat4, pucatex=pucat4ex, out=p4);
%mmcnt(gpucat=gpucat5, pucat=pucat5, pucatex=pucat5ex, out=p5);
%mmcnt(gpucat=gpucat1, pucat=pucat1, pucatex=pucat1ex, out=p1);

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*merge together for rtf table;
data final1;
  merge p2(rename=(pc=p2c)) p3(rename=(pc=p3c)) p4(rename=(pc=p4c)) p5(rename=(pc=p5c)) p1(rename=(pc=p1c));
  by trt order stat;
  *format missing cell to 0;
  if p2c='' then p2c='0';
  if p3c='' then p3c='0';
  if p4c='' then p4c='0';
  if p5c='' then p5c='0';
  if p1c='' then p1c='0';
run;

```

\*Oringal Missing row splite to 2 rows per John email on June 10, 2015 12:42 PM;

\*\*\* 1. For PUCAT1/GPUCAT1=Missing, the client would like the data summarized on a row called Missing. All other columns would have NA.

2. For PUCAT2-PUCAT5/GPUCAT2-GPUCAT5=Missing, the client would like those summarized on a row called Discontinued in previous period and the last column would have NA. ;

```

data final3;
  set final1(where=(stat='Missing'));
  if stat='Missing' and trt=1 then do;
    output;
    stat='Discontinued in previous period';
    trt=1;
    order=16;
    output;
  end;
  else if stat='Missing' and trt=2 then do;
    output;
    stat='Discontinued in previous period';
    trt=2;
    order=20;
    output;
  end;
  else if stat='Missing' and trt=3 then do;
    output;
    stat='Discontinued in previous period';
    trt=3;
    order=25;
    output;
  end;
run;

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data final4;
  set final3;

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*keep Missing row on rtf report even when p1c=0 per John email on 8-18-2015;
if stat="Missing" then do; p2c="N/A"; p3c="N/A"; p4c="N/A"; p5c="N/A"; end;
if stat="Discontinued in previous period" then do; p1c="N/A"; end;
run;

proc sort data=final4;
  by order;
run;

*set together;
data final0;
  set final1(where=(stat ne 'Missing'));
run;

proc sort data=final0;
  by order;
run;

data final;
  set final0 final4;
  by order;
run;

*add blank row per mockup;
data dum;
  set final end=eof;
  output;
  if eof then do;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=4.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=8.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=12.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=13.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=14.5;
    output;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=15.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=16.5;
    output;
    trt=1;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=17.4;
    output;
    trt=2;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c=''; order=21.4;
    output;
    trt=3;
    stat=''; p2c=''; p3c=''; p4c=''; p5c=''; p1c='';
    order=26.5;
    output;
  end;
run;

proc sort data=dum out=final;
  by order;
run;

data final;
  retain stat p2c p3c p4c p5c p1c trt order;
  set final;
run;

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/*output report data; */
%let tflno=T_15_02_02_04;

data tfls.T_15_02_02_04;
  set final ;
run;

data paging;
  set final;
  if _n_<=16 then page=1;
  else if 17<=_n_<=26 then page=2;
  else page=3;
  call symput("page",compress(put(page,best)));
run;

*create rtf report;
options number nodate orientation=landscape missing=' ';
ods escapechar='|';
%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);

%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;

data comp;
  set paging end=eof;
  where page=&i;

  /* Amend title as needed */
  _firtitl=%nrquote("Table 15.2.2.4 Summary of Product Use by Product Use Category in Ambulatory Period - FAS");
  _upcas=(length(_firtitl)-length(compress(_firtitl,'ABCDEFGHIJKLMNOPQRSTUVWXYZ')))/2;
  len=&blankn.-length("(Page &i of &page)");

  if eof then do;
    call symput('_FSRTITL', trim(left(_firtitl)));
    call symput('_blankn', compress(put(len,best)));
  end;
  drop _firtitl _upcas len;
run;

ods proclabel = ' ';
ods listing close;

proc report data = comp headline headskip nowd split = '$' %if &i=1 %then %do; contents=' ' %end; %else %do; contents=' ' %end;;
column page trt order ("Product Use Categorization$" stat) ("Period 2$(%) " p2c) ("Period 3$(%) " p3c)
("Period 4$(%) " p4c) ("Ambulatory$(%) " p5c) ("Ambulatory$Safety$(%) " p1c);
define page          / order order = internal noprint;
define trt           / order order = internal noprint;
define order         / order order = internal noprint;
define stat          / display style={just=left cellwidth=5cm} '';
compute stat;
  if index(stat,"THSm2.2 Arm") or index(stat,"mCC Arm") or index(stat,"SA Arm") then

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        call define(_col_, "style", "style=[fontweight=bold]");
    else if index(stat,"THSm2.2 ([70-100%])" ) or index(stat,"Dual ([30-70%])" ) or index(stat,"CC ([0-30%])" ) or stat='CC Only (Exclusively CC)' or stat='CC Dual (Use of other products)'
        or stat='Missing' or stat='Abstinent' or stat='Not Abstinent' or stat='Predominantly Abstinent' or stat='Discontinued in previous period'
        then call define(_col_, "style", "style=[just=left]");
    else if index(stat,"Exclusively THSm2.2 (100%)" ) or index(stat,"Exclusively CC (0%)" ) then call define(_col_, "style", "style=[indent=110]");
    else
        call define(_col_, "style", "style=[indent=80]");
    endcomp;

define p2c      / display style={just=c cellwidth=1.4cm} style(header)={just=c}"";
compute p2c;
    if index(stat,"THSm2.2 Arm" ) or index(stat,"mCC Arm" ) or index(stat,"SA Arm" ) then call define(_col_, "style", "style=[fontweight=bold]");
endcomp;
define p3c      / display style={just=c cellwidth=1.4cm} style(header)={just=c}"";
compute p3c;
    if index(stat,"THSm2.2 Arm" ) or index(stat,"mCC Arm" ) or index(stat,"SA Arm" ) then call define(_col_, "style", "style=[fontweight=bold]");
endcomp;
define p4c      / display style={just=c cellwidth=1.4cm} style(header)={just=c}"";
compute p4c;
    if index(stat,"THSm2.2 Arm" ) or index(stat,"mCC Arm" ) or index(stat,"SA Arm" ) then call define(_col_, "style", "style=[fontweight=bold]");
endcomp;
define p5c      / display style={just=c cellwidth=1.4cm} style(header)={just=c}"";
compute p5c;
    if index(stat,"THSm2.2 Arm" ) or index(stat,"mCC Arm" ) or index(stat,"SA Arm" ) then call define(_col_, "style", "style=[fontweight=bold]");
endcomp;
define p1c      / display style={just=c cellwidth=1.4cm} style(header)={just=c}"";
compute p1c;
    if index(stat,"THSm2.2 Arm" ) or index(stat,"mCC Arm" ) or index(stat,"SA Arm" ) then call define(_col_, "style", "style=[fontweight=bold]");
endcomp;

compute before page / style={just=left protectspecialchars=off};
line "&linetop";
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 "&linebot";
endcomp;

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 %nrquote ('Note: Ambulatory periods defined as Period 2 ([Day 6 ambulatory - Day 30 Visit]), Period 3 ([Day 30 Visit - Day 60 Visit]) and Period 4 ([Day 60 Visit - Day 90 Visit]).');
line 'Note: Ambulatory Safety column refers to product use categorization over the whole ambulatory period based on missing imputation rules for safety summaries.';
line 'Note: Percentages are based on the number of subjects indicated in each study arm for the FAS. ';
line 'Note: Product use categories in first 4 columns calculated using imputation rules. Product use category in last column calculated without using imputation.';
line 'Note: N/A = Not applicable.';
line ' ';
LINE "Appendix 15.3.2.1.3";
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=26, halfblnk=N);

ods listing;

%m_logchk;

/***** END OF FILE t_prduse_prdcat_fas.sas *****/

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