

Paper 145-28

ODS or DDE for Data Presentation

-- A Preliminary Comparison of Output from Different Sources

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ABSTRACT

To present the data in a desired format from different sources, usually, ODS and DDE are two top picks you may consider. You can use ODS (Output Delivery System) or DDE (Dynamic Data Exchange) to input data from one application and output data to another application. Both ODS and DDE can produce a handful types of output with its own characteristics. Either of these two methods has some limitation. This paper is going to discuss and compare many possibilities with these two methods on their own advantage and limitation.

Under Windows environment, DDE employs the client/server relationship to input and output data from different server applications. You may use DDE to read data from and write data to Word, PDF and Excel.

With SAS version 8 or above, we can make Word, PDF and HTML in many flexible ways by using ODS. There is an easy ODS syntax to create desired file from different types of sources. However, some difficulties when you read a data in which the customized features had already been embedded, such as page break problem, may require utilization of macros to overcome.

KEY WORDS

ODS, DDE, PDF, Microsoft Word, HTML, Excel, Graphics, customized formats, macros, page breaks.

TOPICS WILL BE COVERED

Output from Procedures, Output from SAS Output File, Output from Text File, Output from Graphics;
Output to HTML, Output to PDF, Output to Word, Output to Excel;
ODS to transport data (XML);

ODS FROM PROCEDURES.

ODS is designated to provide more flexible output in different formats such as HTML, RTF and PDF. There always exists a very simple SAS syntax to output from procedures. The syntax of ODS looks like the grammar of German language. In German, the construction of verb or parts of the verb forms a basket to embrace the contents. For instance, Er hat den Film schon gesehen (He has already seen the film). The ODS syntax is just like the verb in German grammar that serves as a basket for you to put everything inside. With ODS we are able to output files directly from SAS PROC REPORT output.

With ODS you may choose any styles of RTF, PDF, HTML and CSC to present the data.

For RTF:

Supposedly you have a macro to output a table for RTF from proc report as follows.

```
%macro report;
proc report data=demo headline missing headskip
  ls=165 ps=47 nowindows split='!' center spacing=7;
  by sitetxt;
  column patid age racetxt height weight col;

  define patid / order order=internal left
    width=10 'Patient ID';
  define age / display right width=5 'Age!(yrs)';
  define racetxt /display left width=15 'Race';
  define height / display right width=6
    'Height!(cm)';
  define weight / display right width=11
    'Baseline!Weight (kg)';
  define col / display left width=83 ' ';

  break after patid / skip;

run;
%mend;

proc template;
define style DefaultWidth;
  parent=Styles.Default;
  REPLACE Table from Output /
    Outputwidth=600;
  REPLACE Frame from Document /
    contentsize=200;
end;
run;
```

```
ODS listing close;
ODS RTF file="&outfile.&pgm..rtf";
%reportt;
ODS RTF close;
ODS listing;
```

Please see figure 1.

ODS creates a Word file in RTF style that looks just like a table with columns and rows. Also ODS can put page number x of y on the table with SAS version 8 or 9.

```
ods escapechar "\";
title1 "Listing 5" j=r
"Page{\field{\*\fldinst{\b\iPAGE}}}\b\iof}{\field{\*\fldinst{\b\iNUMPA
GES}}};
```

For PDF:

Similarly, you can output a report to PDF file.

```
ODS listing close;
ODS printer printer="Acrobat PDFWriter" style=sasdocprinter
file="&outfile.&pgm..pdf";
%report;
ODS printer close;
ODS listing;
```

Please see figure 2.

You may use STYLE option to improve the image of your table presentation. Say, change the background color or have desired fonts and table size.

```
ods listing close;
ods printer printer="Acrobat PDFWriter" style=sasdocprinter
file="&outfile.L000DEM8.pdf";
  *style=styles.mystyle;
options number;

options missing=' ' nobyline;
title ; footnote ;
proc report data=demo headline missing headskip
  ls=165 ps=47 nowindows split='!' center spacing=7
  style(report)={just=center Outputwidth=80%}
  style(header)={font_face="Times New" font_size=6
font_weight=medium}
  style(column)={font_face=bookman font_size=5
foreground=white background=green}
  ;
by sitetxt;
column patid age racetxt height weight col;

define patid / order order=internal left width=10 'Patient ID'
  style(header)={font_face="Courier New" font_size=6
font_weight=bold just=center}
  style(column)={font_face=bookman font_size=5 just=left};
define age / display right width=5 'Age!(yrs)';
define racetxt / display left width=15 'Race';
define height / display right width=6 'Height!(cm)';
define weight / display right width=11 'Baseline!Weight (kg)';
define col / display left width=83 ' ';

break after patid / skip;
run;

ods _all_ close;
ods listing;
```

Please see figure 3 for presentation result.

For HTML:

ODS has the best control over the report presentation for the style of HTML.

```
ODS listing close;
ODS HTML body="&outfile.&pgm..html";
  %report;
ODS HTML close;
ODS listing;
```

Please see figure 4 for HTML result.

For CSV (Excel):

ODS has the capacity to output the report in the style of Excel spreadsheet even though you may have less control over its titles, footnotes and other styles than HTML does.

```
ODS listing close;
ODS CSV file="&outfile.&pgm..csv";
  %report;
ODS CSV close;
ODS listing;
```

Please see figure 5 for CSV result.

As a said basket structure, at the beginning, the ODS first opens HTML, RTF or PDF printer destination. Then, ODS routes the output in desired format to designated file called "&outfile.&pgm..rtf", or "&outfile.&pgm..pdf", or "&outfile.&pgm..html". In the end, the ODS closes the destination and enable the user to print the output.

As we seen from the table in figure 1, it is a very simple output table. For many industry SAS users, the table often time needs a

lot of cosmetics make-up, such as page number, user-formatted titles and footnotes, size of the table, and other user-defined standardized table format. If you have all table formats standardized in previous SAS output, such as LST or LIS files, in which the page number and other standard format are already embedded in, you may want to convert those output into output file by utilizing the ODS.

ODS FROM SAS/GRAPH

ODS is apt to help you drawing graphics in different styles as you desired.

ODS to output a graph:

ODS has easy access to graphic presentation in different styles. The following example demonstrates a simple output graph in HTML.

```
%macro gmac;
  symbol1 i=join value=dot;
  symbol2 i=join value=diamond;
  axis1 order=(0 to 10 by 2) label=(h=1.5 "Time (hours)");
  axis2 order=(0 to 8 by 2) label=(h=1.5 "Concentration (mg/ml)");
  legend1 label=(h=1.5 "Patient");
  title1 "Figure 6";
  title2 "Pharmacokinetic Profile of Concentration Level";
  proc gplot data=gsum;
    plot yvar*xvar=line /
      legend=legend1
      haxis=axis1
      vaxis=axis2
    ;
  run; quit;
%mend;
```

```
ods listing close;
ods html path="&outfile" (url="fig6")
  gpath="&outfile\images" (url="images/")
  body="fig6.html";

  GOPTIONS DEVICE=gif reset=global;
  %gmac;
```

```
ods html close;
ods listing;
```

Use ODS to print a graph:

You may also use ODS to print a graph directly to designated printer. Depending on the host device, you may use ODS to request a Postscript printer and print the graph directly to the printer. For example,

```
GOPTIONS DEVICE=ps300 reset=global gsfname=graph;
%gmac2; quit;
```

ODS FROM SAS OUTPUT FILE

Often times you have existing SAS output and you want to convert the output into output data presentation without alternating its formats. You can use ODS in a DATA step to convert a SAS output that has been in desired format into an output file. First, you may use PROC PRINTTO to route the output to a designated output file.

```
proc printto print="&OUTFILE.&NAME..&DIRECT" new
log="&OUTFILE.&NAME..LOG" new;
run;
```

Then you may use a macro to insert the total page number and

current page number on each page. The new user-customized table will look like the one in "L000DEMO.LIS". This is a ready-to-be-published format. But you may want to put it into output file for the purpose like electronic submission. You can try the following macro to achieve your goal:

Let's take PDF as example:

```
%macro pdfods(inf=&INF, outf=&OUTF);
ods printer style=sasdocprinter file="%str(&outf)" pdf ;
```

```
data _null_;
infile "&INF" end = eof length = a sharebuffers;
file print;
input rline $varying200. a;
put @1 rline;
run;
```

```
ods printer close;
%mend pdfods;
```

You will get a table in PDF format like the one in figure 7. This is a very naïve ODS syntax and its output is not a good presentation.

TO OVERCOME SOME DIFFICULTIES WITH ODS

You may notice that in figure 7 the table does not yield an appropriate page break. Now we try to use a PUT PAGE statement to force a page break.

```
options ls=164 ps=54 nodate nonumber;
title ;
```

```
ods listing close;
```

```
ods printer printer="Acrobat PDFWriter"
file=f2 style=sasdocprinter;
```

```
data _null_;
infile f1 length=len;
input fmdl $ 1 @;
input @1 rline $varying164. len;
file PRINT ;
if fmdl = " " then put _page_ ;
put @1 rline $varying164. len;
run;
```

```
ods _all_ close;
```

However, from the table in figure 8, you may recognize that the page break is still not appropriate yet. In current version of SAS such as version 8, the ODS PRINTER cannot force a page break when you use PUT_PAGE_ statement. We hope that in version 9 the page size will fit exact right from ODS PRINTER so that the page will break appropriately. For now we can try a programming approach to resolve the page break problem in PDF file.

Here we provide you a macro to overcome the page break problem. The macro counts each page of the table then outputs the ODS file.

```
%macro SAS_PDF(style=PDF);
```

```
options ls=164 ps=54 nodate nonumber orientation=landscape;
```

```
ods listing close;
data outpg;
retain pgn 0;
infile &fin lrecl=164 missover ls=164 pad;
input c1 $char164.;
if substr(c1,1,1) = " " then do;
pgn+1;
c1=substr(c1,2,163);
call symput('cnt'||left(pgn),left(pgn));
end;
call symput('last',left(pgn));
run;

%if %upcase(&style)=PDF %then %do;
ods printer printer="Acrobat PDFWriter" file="&fout"
style=sasdocprinter;
%end;
%do i = 1 %to &last;
data _null_;
set outpg;
where pgn=&&cnt&i;
file PRINT ;
put @1 c1 $char164.; run;
%end;
ods _all_ close;
%mend;
```

```
%SAS_PDF(style=PDF);
```

The table in figure 9 provides you a PDF file with user-customized formats and appropriate page break. The PDF is an open, published format. The PDF output has many advantages. It is required by FDA as standard formats used for electronic submission and it is accepted by the International Conference on Harmonization (ICH) for providing documents in electronic format. The method we are introducing will help you not only converting your current output from a SAS procedure into PDF file but also converting all existing SAS output into PDF at one time without alternating any formats already embedded in your previous output files.

DDE FROM SAS OUTPUT FILE

With SAS (version 8 or later) under Microsoft Windows, you will have very flexible environment to use many software applications from SAS. You may automat other applications from SAS using DDE or OLE. DDE is Dynamic Data Exchange system. Under Windows environment, you may use DDE to read and output data across the applications from SAS.

First of all, we would like to create a list of file:

```
data filelst(keep=rtfname pgm);
ckf = filename('myfile', "&outfile");
nid = dopen('myfile');
length pgm $8 rtfname $12;
do i = 1 to dnum(nid);
rtfname = upcase(left(trim(dread(nid, i))));
pgm = scan(rtfname, 1, ".");
if upcase(left(reverse(rtfname))) = 'TSL.' then output;
end;
ckf = dclose(nid);
*proc print; run;
```

```
proc sql noprint;
```

```
select upcase(pgm) into : lst_lst separated by " "
  from filelst;
quit;
```

Then, we will call Microsoft Word to have DDE ready for input the data from server application. You may use SAS to send commands and request data from a server application or output data for a presentation.

```
options noxwait;
filename cmds dde 'winword|system';

data _null_;
length fname $ 8;
fname='tempfile';
rc=filename(fname,'c:\progra~1\micros~2\office\winword.exe');
  call system('start c:\progra~1\micros~2\office\winword.exe');
rc=filename(fname);
t=sleep(3);
run;

data _null_;
cmd= '[AppMaximize]';
file cmds;
put cmd;
```

Since we have already created a text file with extension of LIS or LST, now we open the file and ready for outputting into a style of Word RTF or Acrobat PDF for presentation.

```
data _null_;
file cmds;
cmd=[FileOpen.Name = ' || "" || "&OUTFILE.&var..lst" || "" || '];
put cmd;
run;
```

We can output this file to a style with a server application.

DDE FROM WORD FILE

The data to be read in for DDE are not necessarily to be LIS or LST text file. It could be a file created by a server application. Similarly, we create a short list of existing RTF file;

```
data filelst(keep=rtfname pgm);
ckf = filename('myfile', "&loc");
nid = dopen('myfile');
length pgm $8 rtfname $12;
do i = 1 to dnum(nid);
  rtfname = upcase(left(trim(dread(nid, i))));
  pgm = scan(rtfname, 1, ".");
  if upcase(left(reverse(rtfname))) = 'FTR.' then output;
end;
ckf = dclose(nid);
run;
```

```
Data filelst; set filelst; outord=_n_; run;
```

```
Proc sort data=filelst; by pgm; run;
```

```
%if %upcase("&infile") ne " " %then %do;
  Data memname;
  %do a=1 %to %argct(&infile);
  pgm="%upcase(%scan(%quote(&infile),&A,' '));";
  if indexc(pgm,*)
    then call symput('wildcard','YES');
```

```
  else call symput ('wildcard','NO');
  output;
  %end;
run;
Proc sort data=memname; by pgm; run;
%end;
```

If you want multiple file to be in a presentation, then, you may use wildcard and sub-select data. You may also have the option of generating macro variables to be used for looping.

Same like LST file read by DDE, to read from RTF file, SAS is a powerful client to use DDE to input the data and have the desired formats for good presentation. From SAS you can send commands to Microsoft Word to adjust the page size, fonts and margins.

Now we are ready to insert the Word file.

```
%do a=1 %to &NUMRTF;

data _null_;
file cmds;
cmd=[InsertFile .Name =
' || "" || "&OUTFILE.final\&&RTF&A" || "" || '];
put cmd;
t=sleep(3);
cmd=[InsertPageBreak];
put cmd;
run;
%let b=%scan(&&RTF&A, 1, ".");

%end;
```

Once you have the data read in, with DDE, you may choose to output a report in a style, say, RTF or PDF.

DDE OUTPUT TO RTF

After input data from a server application, DDE is very handy for us to output the file in RFT format. Make sure you adjust the page size, fonts and margins accordingly before you save the file in RTF.

```
data _null_;
cmd=[FileSaveAs.Name = ' || "" || "&OUTFILE.&var..RTF" || "" ||
', .Format=6];
file cmds;
put cmd;
t=sleep(8);
run;

data _null_;
t=sleep(15);
cmd= '[FileClose 2]';
file cmds;
put cmd;
run;
```

Please see figure 10 for presentation.

DDE OUTPUT TO PDF

We may use SAS to command Acrobat Distiller to filter the file into PDF format:

```
data _null_;
  cmd=[FilePrintSetup .Printer = "Acrobat Distiller" ];
  file cmds;
  put cmd;
run;
```

Now we can print to the file and keep it in PDF template for presentation:

```
data _null_;
  file cmds;
  cmd=[FilePrint .Printer = "Acrobat Distiller", .AppendPrFile = 0 ,
.PrToFileName = ' || "" || "&OUTFILE.&var..PRN" ||"" ||
', .PrintToFile = 1];
  put cmd;
  t=sleep(8);
run;
```

```
data _null_;
  t=sleep(15);
  cmd= '[FileClose 2]';
  file cmds;
  put cmd;
run;
```

COMPARE ODS AND DDE

We would like to make a preliminary comparison of the two methods of ODS and DDE:

1. ODS and DDE are two different methods but both can input from and output for consistent presentation across the output destinations;
2. Traditional SAS output has many limitations such as monospace fonts, procedure specific print routines, lack of format control and inability to create HTML output, etc. ODS and DDE enable SAS users partially overcome some difficulties of traditional SAS output;
3. DDE is Microsoft Windows based but ODS is independent from Windows. ODS can be from any platform on which SAS version 8 or better installed. The initial ODS has some inherent weakness but in version 8 or 9 it has improved significantly;
4. Both ODS and DDE can output to different destinations. ODS is apt but less control over some styles of your chosen; DDE needs more programming effort but DDE has the picture taking quality to output data for presentation;
5. ODS has built-in format engines but DDE can manipulate formats from other applications as a server client. ODS has more options and styles of presentation such as HTML and Graphics;
6. For a large data output presentation, ODS is more time efficient but you need to use caution for lack of format control. DDE needs to exchange data in Windows and sometimes you have to wait one step finished to go to next step (so you have to set sleep in program to automatic execution).

Your comments and questions are valued and encouraged.
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CONTACT INFORMATION

Figure 1
Demographics by Investigator
 All Patients

Investigator Name: KIM

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1101/JDB	47	CAUCASIAN	180.3	96.4
1103/PBM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/WGM	48	CAUCASIAN	185.4	82.8
1106/WTD	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

C:\test\1000demo.sas Programmer: JH Extract Date: Table Generation Date: 16DEC2002 : 15:44

Figure 1
Demographics by Investigator
 All Patients

Investigator Name: LEE

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WIL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/N W	32	CAUCASIAN	179.1	124.3
1507/DJB	45	CAUCASIAN	161.3	86.4
1508/JJC	31	CAUCASIAN	162.5	77.9

C:\test\1000demo.sas Programmer: JH Extract Date: Table Generation Date: 16DEC2002 : 15:44

Figure 2
Demographics by Investigator
All Patients

15:44 Monday, December 16, 2002 1

Investigator Name: KIM

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1101/JDB	47	CAUCASIAN	180.3	96.4
1103/PBM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/WGM	48	CAUCASIAN	185.4	82.8
1106/WTD	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

C:\test\i000demo.sas Programmer: JH Extract Date: Table Generation Date: 16DEC2002 : 15:44

Figure 2
Demographics by Investigator
All Patients

15:44 Monday, December 16, 2002 2

Investigator Name: LEE

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/N W	32	CAUCASIAN	179.1	124.3
1507/DIB	45	CAUCASIAN	161.3	86.4
1508/JJC	31	CAUCASIAN	162.5	77.9

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Figure 3
Demographics by Investigator
 All Patients

15:44 Monday, December 16, 2002 1

Investigator Name: KIM

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1101/JDB	47	CAUCASIAN	180.3	96.4
1103/PBM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/WGM	48	CAUCASIAN	185.4	82.8
1106/WTB	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

C:\test\i000demo.sas Programmer: JH Extract Date: Table Generation Date: 16DEC2002 : 15:44

Figure 3
Demographics by Investigator
 All Patients

15:44 Monday, December 16, 2002 2

Investigator Name: LEE

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/N W	32	CAUCASIAN	179.1	124.3
1507/DJB	45	CAUCASIAN	161.3	86.4
1508/JJC	31	CAUCASIAN	162.5	77.9

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Figure 4
Demographics by Investigator
All Patients

Investigator Name: KIM

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1101/JDB	47	CAUCASIAN	180.3	96.4
1103/PBM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/WGM	48	CAUCASIAN	185.4	82.8
1106/WTD	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

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Table Generation Date: 16DEC2002 :
15:44

Figure 4
Demographics by Investigator
All Patients

Investigator Name: LEE

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/N W	32	CAUCASIAN	179.1	124.3
1507/DJB	45	CAUCASIAN	161.3	86.4
1508/JJC	31	CAUCASIAN	162.5	77.9

C:\test\000demo.sas Programmer: JH Extract Date:
Table Generation Date: 16DEC2002 :
15:44

Figure 5

List of Demographics by Investigators

Patient ID	Age(yrs)	Race	Height(cm)	BaselineWeight (kg)
1101/JDB	47	CAUCASIA	180.3	96.4
1103/PBM	51	CAUCASIA		80.7
1104/ADS	54	CAUCASIA	167.6	75.3
1105/WGV	48	CAUCASIA	185.4	82.8
1106/WTB	48	CAUCASIA	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIA	172.7	72.8

Patient ID	Age(yrs)	Race	Height(cm)	BaselineWeight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIA	182	81
1505/WED	42	CAUCASIA	183	79.6
1506/N W	32	CAUCASIA	179.1	124.3
1507/DJB	45	CAUCASIA	161.3	86.4
1508/JJC	31	CAUCASIA	162.5	77.9

Pharmacokinetic Profile of Concentration Level

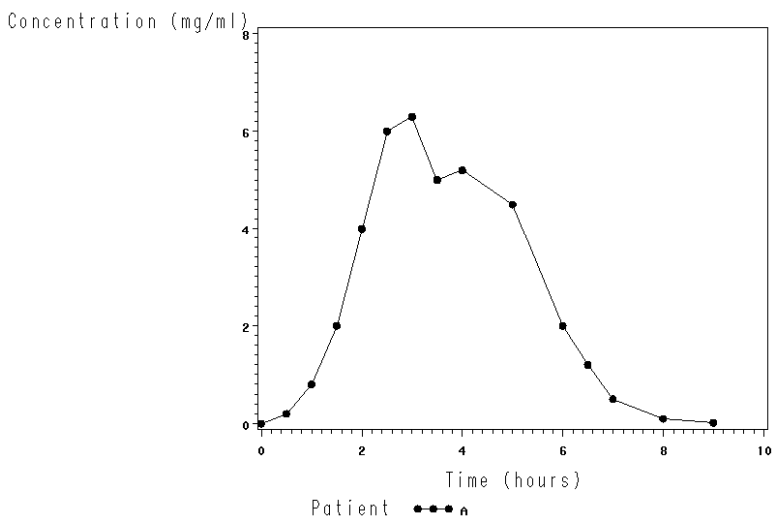


Figure 7
List of Demographics by Investigators
All Patients

Investigator: KIM

Age	Height	Baseline		
Patient ID	(yrs)	Race	(cm)	Weight (kg)
1101/IDB	47	CAUCASIAN	180.3	96.4
1103/PHM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/MCM	48	CAUCASIAN	185.4	82.8
1106/MTD	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

Figure 7
List of Demographics by Investigators
All Patients

Investigator: LEX

Age	Height	Baseline		
Patient ID	(yrs)	Race	(cm)	Weight (kg)
1501/ACT	36	BLACK	185.4	95.7

1502/KJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/H W	32	CAUCASIAN	179.1	124.3
1507/DJB	45	CAUCASIAN	161.3	86.4
1508/ATC	31	CAUCASIAN	162.5	77.9

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Total number of Patients: 15

Figure 7
List of Demographics by Investigators
All Patients

10015A	31	MALE	160.9	84.4
10015B	35	MALE	170.7	88.6
10015C	38	CAUCASIAN	180	91
10015D	42	CAUCASIAN	190	93.8
10015E	33	CAUCASIAN	176.1	108.3
10015F	40	CAUCASIAN	188.8	88.4
10015G	31	CAUCASIAN	160.6	77.8

Figure 8
List of Demographics by Investigator
All Patients

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Total number of persons: 75

Figure 8
List of Demographics by Investigator
All Patients

Investigator ID	Age (Yrs)	Sex	Height (cm)	Baseline Weight (kg)
10015D	42	CAUCASIAN	190	93.8
10015E	33	CAUCASIAN	176.1	108.3
10015F	40	CAUCASIAN	188.8	88.4
10015G	31	CAUCASIAN	160.6	77.8
10015H	37	CAUCASIAN	180	91
10015I	35	MALE	170.7	88.6
10015J	31	MALE	160.9	84.4
10015K	40	CAUCASIAN	188.4	88.8
10015L	38	CAUCASIAN	180	91
10015M	33	CAUCASIAN	176.1	108.3
10015N	42	CAUCASIAN	190	93.8
10015O	35	MALE	170.7	88.6
10015P	31	MALE	160.9	84.4
10015Q	40	CAUCASIAN	188.4	88.8
10015R	38	CAUCASIAN	180	91
10015S	33	CAUCASIAN	176.1	108.3
10015T	42	CAUCASIAN	190	93.8
10015U	35	MALE	170.7	88.6
10015V	31	MALE	160.9	84.4
10015W	40	CAUCASIAN	188.4	88.8
10015X	38	CAUCASIAN	180	91
10015Y	33	CAUCASIAN	176.1	108.3
10015Z	42	CAUCASIAN	190	93.8

Figure 8
List of Demographics by Investigator
All Patients

Investigator ID	Age (Yrs)	Sex	Height (cm)	Baseline Weight (kg)
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Figure 8
List of Geographies by Investigator
All Patients

Investigator: GSK

Patient ID	Age (Yrs)	Sex	Height (cm)	Baseline Weight (kg)
1001000	47	MALE	185.0	85.1
1001001	51	MALE	180.0	80.7
1001002	51	MALE	187.0	91.8
1001003	48	MALE	182.4	82.8
1001004	48	MALE	188.0	84.8
1001005	48	MALE	185.1	80.0
1001006	58	MALE	170.7	72.8

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Figure 8
List of Geographies by Investigator
All Patients

Investigator: LEE

Patient ID	Age (Yrs)	Sex	Height (cm)	Baseline Weight (kg)
1001007	55	MALE	185.1	85.7
1001008	55	MALE	180.0	80.4
1001009	55	MALE	176.7	81.8
1001010	55	MALE	182	81
1001011	47	MALE	180	79.8
1001012	55	MALE	176.1	78.3
1001013	49	MALE	187.0	86.1
1001014	31	MALE	182.0	77.8

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Figure 8
List of Geographies by Investigator
All Patients

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Total number of Patients: 15

Figure 10
List of Demographics by Investigators
All Patients

Investigator: KIM

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1101/JDB	47	CAUCASIAN	180.3	96.4
1103/PBM	51	CAUCASIAN		80.7
1104/ADS	54	CAUCASIAN	167.6	75.3
1105/WGM	48	CAUCASIAN	185.4	82.8
1106/WTD	48	CAUCASIAN	168.9	84.6
1107/M C	46	HISPANIC	165.1	96.3
1108/L B	50	CAUCASIAN	172.7	72.8

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Figure 10
List of Demographics by Investigators
All Patients

Investigator: LEE

Patient ID	Age (yrs)	Race	Height (cm)	Baseline Weight (kg)
1501/ACJ	36	BLACK	185.4	95.7
1502/WJL	22	BLACK	182.9	88.4
1503/RJG	35	BLACK	172.7	91.6
1504/DWJ	38	CAUCASIAN	182	81
1505/WED	42	CAUCASIAN	183	79.6
1506/M W	32	CAUCASIAN	179.1	124.3
1507/DJB	45	CAUCASIAN	161.3	86.4
1508/LJC	31	CAUCASIAN	162.5	77.9

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Figure 10
List of Demographics by Investigators
All Patients

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Total number of Patients: 15

