



Good Programming Practice - Workshop

Agenda

- Introduction (MF) 10 mins
- Split into groups and review code (ALL) 30 mins
- Feedback (5 mins/team)
- Close (MF)

Objectives

■ Today

- To share ideas and examples of how programs can be improved by applying Good programming Practice
- To learn ideas and examples of GPP from others
- To share experiences of how GPP is implemented.

■ For GPP Wiki

- Share ideas and examples of GPP
- Get a feel for what is important and which aspects of GPP are important to some but not others.
- In an hour!

Break out into 3 Groups

- 1. Code Review - Chris
 - Indentation and layout.
 - Commenting
- 2. Code Review - Mark
 - Robustness
 - Maintenance
- 3. Discussion of Good Programming Practice – James
 - What does GPP entail within your company
 - How do you review code

Code Review

- Code Review
 - Use a 'code review' as a basis for discussion.
 - You will be given a piece of code and a description of purpose and example of input or output if needed.
 - Focussing on the area given on the slide, decide
 - What is good about the code ?
 - What would you change ?
 - Capture bullet points
 - Capture some detailed examples as well

Feedback

- Each team has 5 minutes – Need to be concise
- Prioritise feedback around 3-4 key points
- Elect a spokesperson to feedback and take flipchart notes
- A few minutes at the end to capture:
 - Anything you didn't say that the other teams did not address
 - Anything that you disagree with!

■ Group 1

Chris Price

Matthew Beeby
Aurelie Binon
Paul Duckworth
Gary Fleming
Lovemore Gakava
Brian Holden
Phil Holland
John Hennessey
Ryan Morris
Hinal Patel
Vinay Patel
Hans Schneider
Gary Stevens

■ Group 2

Mark Foxwell

Tim Barnett
Daniel Carden
Paul Fardy
Moana Hodari
Mark Hopton
Sai Jandhyala
Vinod Kerai
Mark Luff
Sukhwinder Pabla
Kate Peacock
Amanda Reilly
Kellie Reilly
John Salter

■ Group 3

James Gallagher

Adrienne Bonwick
Paula Finch
Gary Hearfield
Neeraj Malhotra
James McDermott
Choudhury Rahman
Ester Schoeman
Matthew Travell
Peter Van Reusel
Tom Ward
Louise Webber
Andrew York

What's next

- We will capture today's discussion for PhUSE wiki.
- Please have a look (register) at the PhUSE wiki site
 - Add comments
 - Add wiki articles
 - Update today's discussion
 - Add your thoughts on a definitive guideline.
- Register for the GPP survey.
- Thank you for your contributions today

```

                                data dosed;
                                set rawdir.dosing      (keep=patid groupn
                                firstdt1);              by    patid;
                                if first.patid          & firstdt1 ne .;
                                run;                    proc
                                freq                    data=
                                dosed                  groupn /
                                noprint;               percent
                                out=                   count=
                                rename                 run;
                                denom);               data _      null;
                                data _      null;      set      dosed;
                                call _      symput      ('n' ||      put
                                (groupn,1.) , put      (denom,2.));    run;
                                proc            sort data=      rawdir.temppk      out=
                                pkconc          (keep=groupn patid examdate reltime      result);
                                by              groupn patid examdate;              where
                                testcode=      'PKCONC';
                                run;            data pkconc;
                                set pkconc;      %visit;
                                format          nresult best9.;
                                if index(result, 'BLQ') then
                                nresult = 0;      else nresult =
                                input(result,best9.);
                                run;

```

- Extra Slides

Program outline

- Creates (part of) a csv file for a PK modeller to use with nonmem programming package
- The file has one record for each dosing and plasma concentration sampling event. It also has subject level data merged on such as sex, age, baseline ALT, AST and BILI
- You can use the study SDTM datasets to do this. (EX,PC,DM,LB)
- EX has one record per subject with first and last dose
 - Dosing was actually daily and number of days varied with subject
 - Need to create a record for first dose, a record for day 2 which we label steady state and a record for last dose.
- LB has multiple timepoints for lab tests
 - Baselines are not reliable and you need to recalculate (Last sample prior to exstdtc)
 - Need to transpose to get all 3 baselines in an array
- PC may have multiple assessments per day
- A lot of the code can be reviewed without knowing purpose, but this may be of help for some comments.

Final (output) Part File example

USUBJID	DATE	TIME	DV	AMT	SS	DOSE	SEX	ALT
XXX-001	2012-01-12	07:30	0			50	F	34
XXX-001	2012-01-12	08:00		424.0		50	F	34
XXX-001	2012-01-12	09:00	256			50	F	34
XXX-001	2012-01-12	11:00	259			50	F	34
XXX-001	2012-01-13	08:00		424.0	1	50	F	34
XXX-001	2012-01-13	08:00	57			50	F	34
XXX-001	2012-02-01	08:21		424.0		50	F	34
XXX-002	2012-01-18	07:05	0			100	M	36
XXX-002	2012-01-18	07:30		828.1		100	M	36
XXX-002	2012-01-18	08:00	578			100	M	36

Arraying data

```
Proc transpose data=_lb3  
  out=_lb4 ;  
  by usubjid  ;  
  var lbstresn;  
  id lbtestcd ;  
run;
```

```
data _lb7;  
  set _lb3;  
  by usubjid;  
  array param (3) alt ast bili ;  
  retain alt ast bili ;  
  param(parn)=lbstresn;  
  if last.usubjid;  
run;
```

Output

```
proc sql noprint ;  
  select quote(strip(name))  
    into :vars separated by '  
    " " '  
    ,  
  from dictionary.columns  
  where libname='WORK' and  
    memname='NONMEM9'  
  
;  
quit;
```

```
data _null_ ;  
  set nonmem9;  
  file output dsd dlm= ',';  
  if _n_ = 1 then put &vars ;  
  put (_all_) (+0) ;  
run;
```