



Basic Quality Checks by Primary programmer to produce accurate output

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Basic Concepts

- Reading Protocol, CRF and SAP
- Understanding specifications of datasets and variables needed and then check for required data and logic
- Check for data queries/ discrepancies
- Check for complexity of task and quality expectations
- Time needed to complete the task and further changes/ modifications, ask questions and get clarifications
- Objective should be deliver high quality output in timely manner



Checklist

- SAS Log
- Output
- Generate additional supportive SAS output
- Confirm the output met requirements and specifications
- Confirm the format of output
- Document the code and output
- Create missing data summary



Log Checks

- Log is clean without errors and warnings
- Check if any dataset gives 0 observations
- Check for all “Notes” messages carefully
- Division by zero
- W.D warnings
- Repeats of by values



SAS Output checks

- Cross checking tables vs listings and tables vs graphs
- N count in header
- Percentages and decimals display
- p-value lies between 0 and 1
- For listings, check record that has maximum length of character data and if that comes fine in output then there is no truncation

SAS Output (Format Checks)

- Titles and footnotes
- Alignment/ indenting of numbers and percentages
- Display of special characters
- Alignment and Indentation of values
- Date values display
- Display of p-values – if p-value $<.0001$ then display as <0.0001

Format checks (continued)

- Spell check (beauty of brain)

It deosn't mtttaer in waht oredr the ltteers in a wrod are,
the olny iprmoetnt tihng is taht the frist and lsat ltteer
be at the rghit pclae.



Checks in Code

- Writing simple proc prints whenever there is new formula/calculation involved
- Including comments about the logic used or derived variables writing modification history



Self QC

- Comparing mean categorizations
- Comparing derived variables to original variables
- Comparison of Present and Past runs



Conclusion

- Producing high quality output
- Following quality approach includes verifying checklist and Self QC, a SAS programmer can strive for 100% success rate



References

- SAS Programming in Pharmaceutical Industry
- Quality Outcomes and SAS: Structuring, Managing and Working in SAS-Based programming concepts
- Quality Control with SAS Numeric data





Thank you