Empowering SAS® Programmers to Meet Deadlines
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ABSTRACT
How does a manager empower SAS® programmers to meet deadlines in a fast-paced environment? Based on my experience as a SAS programmer and as manager of SAS programmers, I offer the following advice: (1) write clear programming specifications, (2) good communication between the SAS programmer and the study Biostatistician, (3) good communication between the SAS programmer and other personnel, and (4) require SAS programmers to attend team meetings. These suggestions lead to the SAS programmer being a part of a team and, thus, empowering them to meet deadlines.

INTRODUCTION
I manage a SAS programming group for a company that develops in-vitro diagnostic assays and other products. The clinical trials in this type of industry are different than pharmaceutical clinical trials (Smoak 2007). One of the main differences is that clinical trials in the diagnostic industry can be much shorter (usually ranging from weeks to months) than phase III clinical trials in the pharmaceutical industry (ranging from months to years). Meeting deadlines for producing analysis files and tables, listings and graphs when clinical trials are short in duration can be a challenge. In the pharmaceutical industry meeting deadlines is recognized as a challenge (Salsburg 2003):

“This is because the hardest, and most time consuming part of statistical analysis is the organization of SAS files and the structures of report tables and graphs, and a great deal of that work can be done without ever looking at a comparison of treatment groups.”

Having worked on both pharmaceutical and diagnostic clinical trials, I personally find it more challenging to meet deadlines in the diagnostic industry. However, one advantage of diagnostic clinical trials is that they can have fewer datasets than in a pharmaceutical clinical trial.

EMPOWERING SAS PROGRAMMERS
So, how do you empower SAS programmers to meet deadlines in a fast-paced environment? I would suggest the following items. First, writing clear statistical analysis plans, table shells and programming specifications are essential (Eckert 2002, Shen et al 2002, Dunning 2003, Salsburg 2003). From a programmer’s perspective these documents (statistical analysis plans, table shells and programming specifications) need to be carefully reviewed (Edwards 2007). Normally these documents evolve while a clinical trial is being conducted (Shen et al 2002). Therefore, the programmer needs to constantly review these documents and ask questions to clarify what is intended by the study Biostatistician (Edwards 2007).

Second, there needs to be constant communication between the SAS programmer and study Biostatistician about what is actually required for the final report. E-mails and phone calls are useful means of communication, but sometimes face-to-face meetings are the best way to resolve issues. In my role as a manager, I sometimes intervene and help to facilitate this process of communication between Biostatisticians and SAS programmers (Smoak 2006). Afterwards, it may be useful to document (e.g., e-mail) the results of face-to-face meetings to ensure that the programmer clearly understands what is required.

Third, programmers need to communicate face-to-face with individuals other than the Biostatistician. Individuals other than the Biostatistician may include data managers, database programmers, clinical research associates, regulatory personnel, medical writers and so on. Here at Roche Molecular Systems, Inc. we encourage programmers to get out of their cubicles and interact directly with these individuals instead of relying on e-mails and/or phone calls. Some of the interaction that we encourage may not normally be thought of as programming. For example, talking with a regulatory person about e-submission requirements or asking a medical writer about specifications for in-text tables may not normally be thought of as programming tasks, but they are the type of tasks that we encourage our programmers to engage in. Of course, we encourage the programmers to communicate back to the study Biostatistician what they have learned from the regulatory person or the medical writer.

Fourth, several years ago I asked a question on the SAS Listserv (www.sas-l.com) about whether companies require their programmers to attend team meetings (e.g., weekly project meetings). The responses fell into two categories:

- No, programmers do not attend team meetings. The study Biostatistician attends team meetings and then communicates to the programmer any relevant information.
- Yes, programmers do attend team meetings.
At Roche Molecular Systems, Inc. we do expect programmers (usually lead programmers and/or myself as the manager of the programmers) to attend weekly project team meetings. These meetings usually consist of people from Clinical, Data Management, Biostatistics, Medical Writing and Regulatory departments. I see the following advantages of having programmers present at weekly project team meetings:

- The programmer has direct knowledge of any problems during the conduct of the study
- The programmer can ask questions or give input during the meeting
- The programmer gets to know personnel outside of their department and vice versa

The disadvantage of having programmers attend team meetings are:

- The programmer may be out of their comfort zone in dealing with people outside of their department
- Time spent in meetings take away from time spent programming

Based upon my experience, I think that the advantages of having SAS programmers participate in team meetings outweigh the disadvantages. The main advantage that I see is the SAS programmer may gain a better grasp of the study data if they participate in team meetings. Also, when the SAS programmer has the ability to give input and be a part of a team then they become a stakeholder in producing the final report. In other words, they feel empowered to do their job.

CONCLUSION

Based upon my experience the following items helps to empower SAS programmers to meet deadlines in a fast-paced environment: (1) write clear programming specifications, (2) good communication between the SAS programmer and the study Biostatistician, (3) good communication between the SAS programmer and other personnel, and (4) require SAS programmers to attend team meetings. When a programmer feels more a part of a team they feel empowered to meet deadlines. In other words, the programmer is a stakeholder in producing a final report when they feel that they are a part of a team.

REFERENCES


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