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# Clinical Programming at a Crossroads: Meeting Today's Challenges and Preparing for Tomorrow

David J. Polus, COMSYS Clinical, Portage, MI

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## ABSTRACT

Consulting in the Clinical Programming world is more competitive than ever. The demand for a good programmer with clinical knowledge is always increasing. At times, it seems the ideal candidate for a position doesn't exist anywhere. What makes clinical programming so different, anyway?

This paper will review how to recruit, identify and hire the best candidates for the position.

Once they're in the fold, mentoring and training become the keys to long term retention. Personal growth and a sense of belonging ensure a happy consultant, and a happier client.

Finally, there are times when you have to perform damage control with a particular consultant. A well designed and executed Action Plan can help strengthen your relationship with both the client and the consultant.

## INTRODUCTION

The paper is written from the perspective of a consulting company hiring programmers to work on clinical projects for pharmaceutical and biotech clients. Many of the ideas and concepts here are also applicable to recruiting, hiring and training permanent employees.

### Preparing to hire

- **Work closely with your recruiters** – One of the easiest ways to improve your candidate pool is to give your recruiters detailed specifications of the position. Often to a recruiter, SAS is SAS. Give them specific examples of what to look for (or look out for) in a resume. The more information the recruiting team has about the position they're trying to fill, the better the candidates they will pass along.
- **Resumes** – These are often the first impression of a candidate. The internet is full of helpful information on presenting oneself on paper. A good resume succinctly states one's experience, education, as well as applicable certifications and publications.  
  
It should not detail every task ever performed at various positions, nor should one list every single SAS procedure used. A two or three page resume carries more weight than a seven page missive and will more often advance a candidate through the screening process.
- **The Grzebyk-Ragual Model** – When is five years of experience actually equivalent to about two years of solid industry experience? This simple formula can help predict how much relevant experience a candidate possesses.

### The Grzebyk-Ragual Model

$$\text{Months of experience} - \text{Number of jobs} \times 5 - \text{Gaps in employment} = \text{Solid months of industry experience}$$

For example, Candidate A's resume shows just over five years of experience at seven different positions. She has two gaps in employment totaling three months. In most clinical programming positions it takes about five months to be fully effective. This includes time spent on getting equipment set up, completing the onboarding process, obtaining UNIX permissions, reading SOPs, guidelines, protocols and other necessary documentation.

Applying the formula to the example above:

$$62 \text{ months} - 35 \text{ months training} - 3 \text{ months in gaps} = 24 \text{ months}$$

Granted, this formula is simplistic and not without risk, but it can help set realistic expectations and predict success factors when it comes to reviewing resumes. A candidate with two positions over five years is going to look more attractive; the longer a position, the more likely the candidate has been exposed to broader types of work and more extensive tasks.

(Of course, another reason that five years may not be equivalent to five years is the growing trend of resume fraud, be it blatantly padding a resume with fictional positions or overstating one's actual experience. More on that below.)

- **SAS skill benchmarks** – SAS certifications and other SAS on-line testing are ways to gauge a candidate's skill level. SAS certification is easily verified by visiting the SAS website (<http://support.sas.com/certify/community/dir.find.hspl>). As noted on the site, if a candidate is not listed, they may not have given permission to be listed. In these cases, the candidate can forward a scanned copy of the certificate and test results.
- If applicable, recruiters may have other tools in their arsenal, such as online preemployment testing. These test results often include metrics, such as the length of time, total score, subsection scores, and a percentile ranking of the candidate versus others who have taken the test. These test results can be used to determine which candidates should advance through the screening process.
- **Technical phone screen (TPS)** – The TPS is a great way to hear how a candidate presents themselves over the

phone. It starts with a defined set of questions that address concepts such as Base SAS, macros, clinical programming, platforms, SQL, as well as open ended questions about Software Development Life Cycle and the drug development process. The answers give the interviewer a good sense of not only what the candidate knows, but also a glimpse into their thought process. Are they a self starter? Will they take ownership of their assignments, or will they merely wait for tasks to be given to them?

Some of the concepts covered should be advanced; a good candidate will be able to admit when they don't have experience in a certain area, and then state how they would approach educating themselves. Have the candidates give examples of applicable experience. A good resume is only half of the story; a candidate should be able to speak to their resume with confidence. Ask questions about what type of work a candidate enjoys, and what past accomplishments they're most proud of. Try to gauge how well they would fit into an existing team. Look for candidates who haven't been content to stay confined in a virtual box, performing the same tasks over and over.

In some assignments, a consultant may never actually see the client face-to-face. Email and phone communications are critical links to the lead programmers; the TPS is a great tool to assess knowledge and gauge oral and aural skills.

Again, the internet is full of resources regarding technical SAS interview questions. No discussion on this topic would be complete without mentioning Neil Howard's paper from SUGI 25: "The Ultimate Match Merge: Hiring the Best SAS Programmers." While this author has not consciously stolen concepts from Neil's paper, there are likely similar elements.

- **Second interview** – A face-to-face interview is always preferred. If not possible, an extended phone screen is appropriate. Try to have another individual involved with the second interview to gain a consensus opinion of a candidate's skill set.

Review notes from the first interview to identify concepts that weren't covered, or areas that weren't fully explored. Assess whether a candidate's experience is applicable to the current job opening. Positions in data management vary significantly from company to company. While it may sometimes simply be extracting data from Oracle Clinical at one place, it may be creating derived data sets at another.

A short SAS programming assignment with sanitized clinical data and specifications will indicate how a candidate approaches their work and leaves a sample of their code for later review.

- **Building large teams** – Occasionally you may be asked to quickly assemble a large team of programmers. Two concepts are extremely important in such a case.

First, try to hire programmers with demonstrated leadership skills earlier rather than later or have a project manager in place. While it may be easier to identify several junior level candidates, without leadership, they will flounder individually and as a group.

Second, do not lower your standards in order to staff the project quickly. Good candidates are out there to be found; be patient and find them.

- **Due diligence** – Effectively verifying a candidate's experience as legitimate is critical and will become even more so in the future. Always check references, and if a reference doesn't seem credible, ask the candidate for another one. If a candidate split their time between two groups, make sure they give a reference from the most applicable department.

Take the time to verify certifications and degrees. Find out in which year a candidate obtained a degree. They may claim to have been working onsite in New Jersey while earning a masters degree from Louisiana Tech by attending online courses. A phone call or e-mail to the department head at the university will root out whether this is even possible.

There are many ways to learn if a candidate's resume rings true. Check the area code of the candidate's phone number; it may give a clue to where they've lived while attending school or working. If it doesn't match any listed university or place of employment, be wary. Google the candidate and follow any links to social networking sites. Obviously this isn't effective for some common names, but it can be a valuable tool for others.

Although the extra time spent in performing due diligence may cost a qualified candidate or two, in the long run it will prevent several bad hires from ever occurring.

- **Trust your instincts** – Occasionally a candidate falls just shy of the minimum requirements for a position, but you feel strongly that this is a win-win for everyone involved. If you have an established relationship with a client, work to obtain a trial or probationary period for the consultant, including a defined review date. Often times, the individual in question becomes the 'go to' programmer that the client has been searching for.

On the other end of the spectrum, a candidate can possess the world's best resume and still not be suited for the position. Again, trust your gut.

## Once they're hired

- **Give them time...** – By the time the consultant walks in the door and signs the necessary paperwork, it can often be 2-3 weeks until they're even ready to start an assignment. Setting up the VPN connection, reading SOPs, completing required training, obtaining logon IDs and UNIX permissions can often take longer than expected. Patience from all parties is necessary to give a new hire the best chance of success.
- **...but don't ignore them** – Assign a mentor to a new hire, preferably from the same project team. Have a written plan prepared with all the training requirements, applicable links to project folders, and any other information that would be helpful. A new programmer wants to contribute; allowing them to ask basic questions of their mentor early on will get them up and running quickly. Have them job shadow for a day or two. Assign small manageable tasks to help build their confidence when they're ready, and then assign more difficult tasks. Set expectations as to how long a particular task typically takes to complete and offer constructive comments to move them forward.

Give them examples of a well written status report, how often they write one, and to whom it should be sent. Put yourself in their shoes; consider what was most (and least) helpful when you were new to the position.

- **Filling in the gaps** – Often, even a seasoned senior programmer has holes in their knowledge base. It's critical for team leads to recognize these gaps and tactfully find ways to spackle those cracks. Training on a formal and informal level is necessary to maintain a skill set.

A technical library is often beneficial; old SAS manuals can still be relevant as they sit next to trade journals and other reference books.

Sponsor "lunch and learn" sessions, and send out helpful links to the entire team (e.g. UNIX tips, online SAS manual, SAS code samples, departmental intranet sites). Don't assume that everyone knows how to get to these sites.

Some companies offer continuing education courses or self directed training, such as SkillPort or Books 24/7. Encourage personal growth through the use of these resources. Employee retention is not an accident!

- **Damage control** – What happens when your programmer just gets off on the wrong foot with a client? Often times, the programmer is labeled as "damaged goods" with a department, and nobody else even wants to work with them.

A well designed Action Plan can help turn this around. The Action Plan should include frequent status reports, mentoring by a senior member of the team, and continuing education (formal and informal) as necessary and appropriate to improve the employee's performance. It is crucial that the employee have input to the Action Plan in order to take ownership of it.

Set a target date for the completion of the probationary period. At that time, set up a meeting with the client to discuss the progress that the employee has demonstrated. Work with the client to find an assignment that fits squarely within the skill set of the employee to build confidence and the relationship from both sides.

## CONCLUSION

Great clients deserve great clinical programmers. Finding that fit is often easier said than done.

A systematic method of recruiting, hiring, training and retaining consultants is the key to successful relationship between the client, the consultant, and the consulting company.

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## REFERENCES

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## Contact information

Dave Polus [dpolus@comsys.com](mailto:dpolus@comsys.com)