EDUCATION NEWS

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Assessment of Recent Graduates Preparedness for Entry into Practice

To date no studies have been conducted to assess the preparedness of CRNA graduates for entry into practice by asking graduates and their respective employers to assess specific competencies. The purpose of this study was to assess recent graduates' preparation and performance. It was hypothesized recent graduates are prepared for entry into nurse anesthesia practice. This study was conducted between August 2011 and February 2012. An online survey tool was used to rate graduates' preparedness to perform 17 professional competencies. Surveys were distributed to 2,349 CRNAs who graduated in 2009 and 2,663 employers who hired recent graduates. A power of 90% for employers and 85% for graduates was obtained (P = .05). Analysis of a sample size of 148 matched graduate-employer pairs provided 88% power. Overall, 98% of the graduates

and 97% of the employers indicated graduates were prepared for practice. Of the 1,407 graduates assessed by employers, 1,343 (96%) would be hired again. Competencies identified as opportunities to enhance include administration of peripheral nerve blocks, insertion of central lines, insertion of pulmonary artery (PA) catheters, and chronic pain management techniques. The majority of employers rated these competencies as not applicable in their practice setting. Results suggest recent graduates are prepared and perform the competencies for entry into practice. While graduates and employers identified opportunities to enhance preparation it may not be sufficient to simply improve education without changing CRNA practice expectations.

Keywords: Graduates, practice, preparation, quality.

The foundation of the nurse anesthesia profession is based on high quality educational programs and their graduates. The primary goals of the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) are to foster academic quality in nurse anesthesia programs and to assist programs in improving educational quality. The COA monitors the quality of nurse anesthesia programs by assessing programs' compliance with the *Standards for Accreditation of Nurse Anesthesia Educational Programs*.[1] Through a variety of accreditation activities, the COA monitors the quality of

programs. However, to date, no studies have been conducted to assess the preparedness of nurse anesthesia graduates for entry into practice by asking graduates and their respective employers to assess specific competencies. In keeping with the COA's goals and to include its communities of interest in COA's quality improvement initiatives, the COA conducted a study. The purpose of this study was to assess recent graduates' preparation and performance on entry into practice. The COA hypothesized recent graduates are prepared for entry into nurse anesthesia practice.

Methods

This study was conducted between August 2011 and February 2012. An online survey tool was used to rate how well graduates were prepared and performed 17 professional competencies (Table). The competencies were rated using a five point Likert scale. Surveys were distributed to 2,349 CRNAs from accredited programs who were 2 years post-graduation. The CRNAs had completed their educational programs in 2009. The survey was also distributed to 2,663 employers who hired recent graduates.

SPSS for Windows (Version 17) was used for data management and

1. Performs preanesthetic assessment
2. Requests appropriate consultations and diagnostic studies while performing preanesthetic patient assessments
3. Provides anesthesia in a manner that optimizes patient safety
4. Administers spinal anesthesia
5. Administers epidural anesthesia
6. Administers peripheral nerve blocks
7. Inserts arterial lines
8. Inserts central lines
9. Inserts pulmonary artery catheters
10. Interprets monitoring data to make appropriate adjustments in patient care
11. Performs advanced airway management
12. Independently manages the anesthetic from beginning to end
13. Provides post-anesthesia follow-up assessment and care
14. Implements acute post-operative pain management
15. Administers chronic pain management techniques
16. Responds appropriately to emergency situations
17. Interacts on a professional level with integrity

Table. Competencies Assessed by the Graduates and Employers

statistical analysis. Independent groups were compared with respect to percentages using the χ^2 test of association for employer and graduate data. Nonparametric tests (ie, Kruskal-Wallis and Mann-Whitney) were used to compare independent groups and ordinal variables. A power of 90% for employers and 85% for graduates was obtained with a 0.05 significance level. A matched pair analysis was also conducted. The matched pair analysis provided a means of direct comparison of the two groups' responses. Acknowledging that graduates and employers are 2 separate groups, their surveys were analyzed independently. The matched pair analysis increased the confidence of the findings. The more similar the results were between the matched pairs and the 2 separate groups, the greater the accuracy of the separate group surveys. In other words, it provided assurance that the graduates and the employers were assessing the same things. The high statistical power of this study is reflected in the large number of statistically significant differences that were found when the analyses were carried out. The matched pairs were established by asking the graduates to identify their workplace location and by asking the employers for their address. The information was collated and a sample size of 148 matched graduate-employer pairs was identified, ensuring 88% power.

Results

A total of 560 (24%) of the recent graduates and 696 (30%) of the employers completed the survey. The employers evaluated a total of 1,413 graduates for entry into practice and 1,407 graduates for rehire. In addition a sample of 148 matched graduate-employer pairs was identified. Both graduates and employers were asked open-ended questions about perceived strengths and skills lacked. Graduates were much more critical of their own performance than were employers and tended to focus on specific skills. No skill area was reported lacking by as much as 5% of employers. Both groups showed higher ratings for "general" abilities such as competence, independence, and knowledge, although teamwork and judgment/critical thinking of the graduates were cited as both a strength and a weakness by employers.

• *Perceptions of overall preparation for entry into practice and willingness to hire again.* Both graduates and employers were asked open-ended questions about perceived preparation. In addition, employers were asked for specific lack of preparation reasons and why they would be unwilling to hire a recent graduate again. When asked if they were prepared overall to enter practice at their institutions/practice settings, 97.8% (532/544) of graduates reported that they were prepared (Figure 1). Only 12 of 544 (2.2%) graduate responders cited reasons such as poor clinical training, not allowed to practice independently, or concerns about being used as "cheap labor."

When employers were asked if their recent graduates were prepared overall to enter practice at their institutions/practice settings, 96.5% (1363/1413) of rated graduates were considered prepared overall by their employers (See Figure 1). When employers were asked whether they would hire their recent graduates again, the employers of 95.5% (1343/1407) of the rated graduates reported that they would hire the graduate again. A general lack of clinical skills and a lack of clinical skills specific to difficult cases were reasons identified by employers as perceptions related to Lack of Preparation-and-Unwillingness to Rehire the Graduate. Employers also cited not being a team player, poor work ethic, personality issues and unreliability as other reasons not to rehire.

• *Practice settings, employer types, and practice models.* Among practice settings, community hospitals, university medical centers and critical access hospitals predominated with over 50% in community hospitals (Figure 2). Medical direction and medical supervision were the primary billing structure with the same distribution over all three groups (Figure 3). Among employer types, anesthesiologist-owned group practices and hospital or facility set-
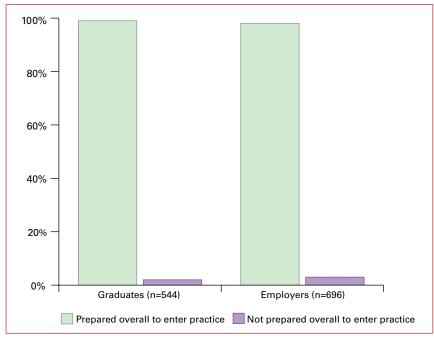
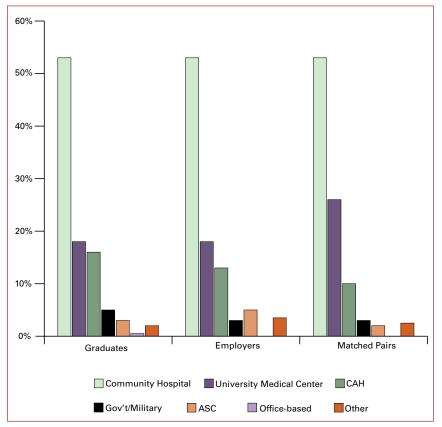**Figure 1.** Perceptions of Overall Preparation to Enter Practice

Figure 2. Practice Settings

lines (CVL); inserting pulmonary artery (PA) catheters; and administering chronic pain management (CPM) techniques were areas in which the majority of the surveyed recent graduates do not practice to the extent reported for the other elements of practice.

• *Adequacy of preparation.* As stated above, the four elements of nurse anesthesia practice that were identified in both the graduate and employer surveys: administration of peripheral nerve blocks; insertions of central lines; insertion of pulmonary artery catheters; administration of chronic pain management techniques are opportunities for enhancement in the preparation of nurse anesthetists.

It is important to note that there were very high levels of neutrality and not applicable responses among the employers to all these items, much higher than the other items in the survey. Employers were more satisfied overall with preparation of the graduate than were the graduates in regard to the four elements identified above.

• *Adequacy of performance.* The same 4 elements of nurse anesthesia practice in both the graduate and employer surveys were identified as statistically significant differences ($P < .05$) in perceptions of performance. Graduates were consistently more critical of their own performance in these areas, but there were also high levels of neutrality and not applicable responses. Employers rated the graduates higher than the graduates rated themselves. In addition, employers had very high responses of not applicable in all 4 instances. The areas that had the highest percentages of *Not Applicable to My Practice for Adequacy of Performance* as rated by the employers in the matched pairs analysis were in administration of peripheral nerve blocks; insertion of central lines including PA catheters; and chronic pain management.
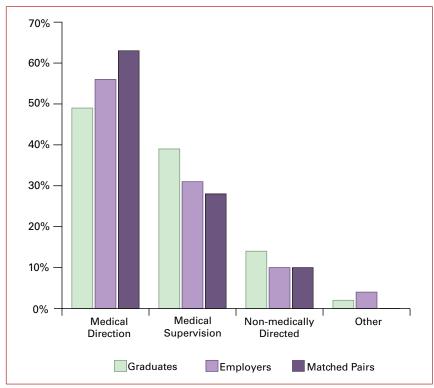
tings were clearly dominant.

In reality, the actual scope of practice of CRNAs in the clinical arena may have implications for the educational preparation of nurse anesthetists. Four areas of practice: administering peripheral nerve blocks (PNBs); inserting central

Figure 3. Predominant Billing Structure

Discussion

• *Overall performance.* The survey results suggest that recent graduates and employers believe that graduates are prepared and perform the 17 identified professional competencies for entry into nurse anesthesia practice. A significant proportion of the graduates (97.8%) stated they were prepared overall to enter practice at their institution/practice setting. The survey also indicated that 96.5% of the employers felt their recent graduates were prepared overall to enter practice and 95.5% stated they would rehire the graduate.

Greater than 50% of the respondents in both groups were employed at community hospitals. The survey's employer respondents were from a wide distribution of practice settings, employer types, and practice models. The employers from all settings assessed the preparation of graduates as meeting or exceeding expectations.

Four elements of nurse anesthesia practice were statistically identified as possible areas where

clinical education might be enhanced. The four elements of clinical practice were: 1) administration of peripheral nerve blocks, 2) insertion of central venous lines, 3) insertion of PA catheters, and 4) administration of chronic pain management techniques. The high level of neutrality or not applicable responses to those elements should be considered when drawing a conclusion about the significance of the four elements identified as areas where enhanced clinical preparation for practice should be considered.

Some graduates expressed concern that they were not allowed to learn or practice these techniques because they were performed only by anesthesiologists or residents. In some cases, graduates were concerned that they were proficient in these techniques when they graduated but lost their proficiency because they were not allowed to practice these skills. For this reason, it may not be adequate to simply improve education in the above areas without also examining the

impact of the practice settings and employment models on CRNAs in general.

Conclusion

The results of this study suggest the vast majority of new graduates enter into nurse anesthesia practice prepared with the required knowledge and skills to practice as safe, competent providers. While there are always potential areas for enhancing education and skills, the study supports that nurse anesthesia programs are providing educational offerings that prepare graduates for today's practice requirements. The results also suggest that to enhance practice it is not sufficient to simply add educational requirements without changing CRNAs' expectations of their practice. Further research is needed to determine if CRNA expectations regarding practice are a result of specific practice models, location of clinical sites, and advancements in healthcare particularly related to invasive monitoring techniques.

REFERENCE

1. Council on Accreditation of Nurse Anesthesia Educational Programs (COA). *Standards for Accreditation of Nurse Anesthesia Educational Programs,* Park Ridge, IL, 2004.

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