

Validation and Normalization of a Global Assessment of Trainee Competency in Regional Anesthesia Procedural Skills

Robert Maniker – Columbia University

Jeremy Kiffel – Columbia University

Glenn Woodworth – Oregon Health & Science University

Introduction: There are few validated, practical tools for the assessment of procedural competency in regional anesthesia. Previously developed assessment tools are cumbersome to complete, precluding real-time use in the clinical environment. We previously described the development of a practical, 7-item global rating scale (GRS) for regional procedures that can be used both in documentation of trainee skill competency and as a mechanism for structured feedback from faculty to trainees. Reliability of this tool has been evaluated in a previous study and we now describe a study to validate the tool for spinal procedures and establish normalized learning curves for use as a reference for educators and trainees using the tool.

Methods: After IRB approval and with subject consent, a prospective observational study was initiated to collect GRS ratings of spinal anesthesia procedures by PGY 2-4 residents during a simulated patient encounter (SPE). The SPE included patient evaluation and consent followed by intraoperative spinal placement on a high-fidelity mannequin with imbedded spinal task trainer. Procedures were observed by faculty and fellow anesthesiologists who had previously completed a 20-minute video rater training module. Raters completed the 7-item GRS and then used the tool to provide structured feedback. From May 2017 to July 2018, data from 120 spinal anesthesia procedure evaluations was collected. Trainee procedure experience level and post-graduate training level were also recorded. Composite GRS scores and individual GRS item scores were then compared between inexperienced (<20 prior spinal) and experienced (≥ 20 prior spinal) trainees. Normalized curves that display the average composite GRS scores for different levels of procedure experience were produced.

Results: GRS assessment scores were significantly higher for experienced trainees compared to inexperienced trainees (mean raw score 46.1/63 vs 36.6/63, respectively, $p < 0.0001$). Normalized curves for spinal anesthesia demonstrate a progressive trend of increasing scores with increasing procedure experience (Figure 1).

Discussion: This study provides evidence for the validity of a GRS to assess trainee competency in the administration of spinal anesthesia as well as normalized performance curves for norm-referenced comparison of trainee progress throughout residency. With this data, the GRS tool can be used to determine whether a trainee is performing at a level commensurate with their stage of training and experience, is meeting minimum competency criteria, can function with greater levels of autonomy, or would benefit from targeted remediation. Future study will assess validity and norm-referencing for other regional anesthesia procedures such as epidural and peripheral nerve blocks.

Abstract R11

Figure 1:

Figure 1. Box Plot of average composite GRS scores for increasing levels of procedure experience.

