

Title : CONTINUOUS LUMBAR EPIDURAL ANESTHESIA SKILL TEST

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Introduction. Performance of motor skills by resident physicians is usually assessed by faculty in random, unorganized manner which introduces subjective bias. In order to perform objective assessment of residents' performance, the Inter-Hospital Study Group consisting of representative faculty members from five major teaching programs, has developed a number of skill tests. Herewith we describe the development and reliability measurement of continuous lumbar epidural anesthesia skill test.

Methods. The definition of the behavior to be observed and measured or task definition was performed by the above faculty anesthesiologists in group discussion after consultation with eminent experts in the field. This resulted in a 61 item skill test covering all aspects of the performance of continuous lumbar epidural anesthesia including set-up, skin preparation and draping, the preparation of the epidural kit and the actual performance of the lumbar epidural anesthesia including insertion of epidural catheter and injection of local anesthetic drug. Also included were items on monitoring and determination of block level for up to 30 minutes following injection of local anesthetic drug. The skill test also included an instruction booklet for raters which describes specific criterion of performance for each of the 61 items.

In order to measure the reliability of the test instrument, eight performances of continuous lumbar epidural anesthesia (by seven residents and one faculty anesthesiologist) were videotaped on a black and white $\frac{1}{2}$ " videocassette by one of the members of the group (MS). Videotapes were then viewed simultaneously by all members of the group. Each item of the skill test was rated as "performed" or "not performed" based on criterion of performance described in the accompanying booklet. Items that could not be observed on the videotape were rated as "not performed." Inter-rater reliability or the tendency toward agreement between individual raters was mea-

sured using Cohen's Coefficient Kappa (K). Statistical analysis of the entire test was accomplished by comparing each rater with the rest of the raters on each item and developing a mean value for the total test.

Result. Cohen's Coefficient K for the entire test was 0.8165 which indicates a high degree of agreement between the raters on the performance or non performance of various items. The theoretical value of K is 1 when there is total agreement between the different raters.

Discussion. Essential steps in the development of skill tests are task definition and reliability testing. (1). Task definition was done by qualified faculty anesthesiologists after consultation with eminent experts in the field and we believe it to be adequate. Reliability testing using videotaped performances has shown the test instrument to be highly reliable. It should be acknowledged that there are intrinsic limitations in the use of videotape. For example, the field of vision of the camera is limited but highly focussed. This tends to highlight certain events but ignores events taking place in other areas of the room. However, the use of videotape assures that all raters view the performance from the same perspective thus minimizing inconsistency between raters.

In conclusion, we have developed and tested a skill test for the performance of continuous lumbar epidural anesthesia. There is a high degree of agreement between raters about the mastery level of performers. The test can be used to objectively evaluate resident physicians on the performance of this motor skill.

References.

1. Glaser R, Klaus DJ: Proficiency Measurement: Assessing Human Performance in Psychological Principles in System Development (ed) Gagne RM. Holt, Rinehart and Winston, New York 1962.