TITLE: **EVALUATING THE CONTENT OF CLINICAL CONFERENCES: IS IT A DIFFERENT KNOWLEDGE BASE?**

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INTRODUCTION. Most medical specialties assess (1) resident knowledge with written/oral examinations and (2) clinical performance with skill tests, rating scales and patient management problems [1]. Investigators have been unable to demonstrate sufficient correlation between objective test scores and clinical performance to warrant prediction. Therefore, a combination of evaluative tools are usually employed to evaluate the extent to which knowledge and skill have been integrated to produce competence.

Written examinations have historically been based upon the basic science content of the curriculum. This is mainly the result of poor success in testing clinical management skills with objective tests. In addition, there have been few reports of attempts to evaluate the clinically oriented content of case management conferences or M and M's (Morbidity and Mortality conferences) with paper and pencil tests.

An interest in quality assurance, and evaluating resident understanding of local clinical problems and standard management protocols prompted the design of a brief objective examination based on weekly case conferences. We were also interested in assessing the relationship of scores on this test with other internal (departmental) and external (ITE; AKT-6) examinations and O.R. performance.

METHODS. Twenty-three CA-I and II residents received a 14 week basic science course (BSc: anatomy, physiology, pharmacology topics) and clinical correlation conferences (CSc: standard cases, M & M's with didactic teaching) in a lecture/discussion format. Daily clinical performance for the residents was evaluated simultaneously using the CASE method [2]. A 25 question CSc examination was generated from the conference material and included in a standard BSc test (N = 128; BSc = 103). The composite test was administered at the conclusion of the lecture/conference series. CSc questions were dispersed throughout the BSc test and residents were unaware that direct questions from the conference material would be included on the exam.

BSc and CSc questions were scored separately by standard methods (% right, $\bar{M}$, and s.d.). Differences in individual scores from the mean were converted to s.d. units (Score - $\bar{M}$ / s.d. = z-Score). Six months of cumulative daily evaluations were used to calculate a clinical knowledge (KN) z-score for each resident.

Residents were ranked by class according to BSc, CSc, combined BSc/CSc, ITE (1987), and AKT-6 scores. These rankings were compared to one another and to KN using Spearman r.

RESULTS. Spearman r for all tests are presented in Table 1. The correlation between ITE and AKT-6 increased with advancing training as did the correlation between BSc and CSc. At no point however, can BSc be used to predict CSc. Correlation between CSc/ITE and BSc/ITE also increases across time but is never significant. There was no significant correlation between any test score and KN (Table 2).

DISCUSSION. We had expected that BSc might predict CSc. Low correlation between these variables suggest the tests address a different content. Residents appear to develop more than one type of knowledge base. One knowledge base (KB1) may integrate content covered by standard exams (ITE, AKT-6,etc.). A second knowledge base (KB2) may deal with content directly related to management protocols discussed during conferences in conjunction with expanding clinical experience. Although KB1 and KB2 are undoubtedly related, they are unlikely the same. On the other hand, KN most likely reflects faculty perceptions of both KB1 and KB2 as well as a resident's ability to apply both effectively in clinical situations. While KB2 is unlikely to predict clinical performance, it may may provide an additional dimension in the evaluation of knowledge.

REFERENCES

1. Lazae HL, DeLand EC, Tompkins RK: Clinical performance versus in-training examinations as measures of surgical competence. Surgery 1980; 87:357-362.
2. Leon-Ruiz EN, Bell MJ, Rhoton MF, Cascorbi HF: Evaluation of clinical competence: a simple system. Abstracts of the American Society of Anesthesiology, 1983.

TABLE 1
Correlation of Exam Scores

	n	ITE/AKT-6	BSc/CSc	CSc/ITE	BSc/ITE(a)
CA-I	12	0.352	-0.178	0.396	0.326
CA-II	11	0.667(b)	0.528	0.604	0.493

(a) See text for abbreviations
(b) n = 9; no AKT-6 score for 2 residents

TABLE 2
Correlation of Exam & Clinical Knowledge Scores

	ITE/KN	AKT-6/KN	BSc/KN	CSc/KN(a)
CA-I	0.232	0.130	-0.060	0.370
CA-II	-0.075	0.378	-0.053	0.276

(a) See text for abbreviations