Title: A COST-EFFECTIVE COMPUTER AID FOR RESIDENT CLINICAL COMPETENCE ASSESSMENT

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INTRODUCTION: The most difficult area of resident training to evaluate is the progressive acquisition of clinical skills by the individual resident. Factual knowledge can be evaluated by well tried and proven examination techniques, but the assessment of progress towards clinical "maturity" is still largely dependent upon the master's opinion of the apprentice. In most anesthesiology training programs many residents are trained by many faculty. Individual faculty-resident contacts are intermittent, limited to the care of a single patient or to patients scheduled in a single operating room on a given day.

Compliance was poor with the recommended ABA method of assessment, where faculty members were required to complete a standard form once a month. Several excuses were advanced including that a fair assessment was impossible if a faculty member had worked with a particular resident too infrequently.

Changing established methods of staffing to achieve longer periods of individual faculty/resident contact for monthly assessments was considered impractical, therefore it was decided to change the basis of assessment to individual patient cases.

METHODS: The expectation was suggested that each member of the faculty was required to record an assessment on 80% of all resident managed ELECTIVE cases scheduled under his or her supervision. 80% of more than 10,000 resident managed elective cases per annum seemed to preclude the completion of a two page ABA report on each! Therefore we have programmed a largely "paperless" computer system to address the problem of mass data acquisition and storage.

It was decided that such a system would have to meet the following criteria to be acceptable.

1. An easy to use computer interface requiring no prior knowledge on the part of the faculty.
2. An inexpensive system to justify dedication to a single task.
3. A simple start-up procedure to permit daily delegation.
4. Adequate security to ensure confidentiality for the trainees.

The first two requirements were satisfied by a Commodore 64 computer. This is an established, reliable machine, now heavily discounted, which permits the use of several different user interfaces. The most acceptable faculty interface was found to be a light-pen. Ease of start-up and system security were addressed through programming.

The system configuration consists of a Commodore 64 computer, a Commodore 1541 disk drive, a low persistence phosphor color video monitor, an Inkwell light pen and a compatible dot-matrix printer. The total cost of the system discounted was $796.96.

System set-up is achieved with a single command to load the data collection program from a master disk. The secretary is then asked to replace the program disk with the cumulative data file disk and enter the current date. The program then disables the keyboard to prevent further interference and for the rest of the day permits only light-pen driven data entry from the various program screens.

The faculty are asked to identify themselves and the resident to be evaluated from lists of names on the screen. The faculty are then asked to evaluate the resident in three areas; pre-operative assessment of the patient, intra-operative management and clinical judgment demonstrated. Each field offers five grades of assessment; excellent, good, average, marginal and bad. No definitions are offered. If excellent or bad is entered in any field a report sheet is automatically printed requesting a written explanation from the faculty assessor. If neither extreme is assessed the faculty is still offered the option of entering written comments if he or she wishes. The written reports are filed in a locked mailbox beside the system.

RESULTS: 25 Faculty were involved in a two month start up trial during which the light pen interface program was progressively "debugged" and modified to accommodate demonstrated data-entry problems for different individuals. Once the interface was performing satisfactorily, a three month pilot project was mounted in one major operating room suite to assess 35 residents with the same 25 faculty members.

During the 3 month trial 84% participation by faculty members was achieved. 1,027 case assessments were entered accompanied by 176 written comment reports.

3,547 total cases requiring anesthetic services were recorded during the trial period, but of those, 710 were urgent cases outside the elective schedule. A further 954 cases were managed by non-resident personnel. The remaining 1,883 elective cases were theoretically "qualified" for assessment. However review of selected operating room schedules suggested that cases where the resident was relieved before completing the case were not being entered, and this was estimated to amount to 470 cases over the trial period. Therefore an overall capture rate of 72.7% of cases was being achieved (54.5% of theoretically "qualified" elective cases).

CONCLUSIONS: The system was successful in capturing a large volume of faculty assessments suggesting faculty preference for this method. The written supplementary reports generated appear to fulfill the same function as the ABA recommended professional qualities assessment questions. The systematized collection and reporting of this essentially subjective information appears to provide a more reliable means of monitoring resident professional development and the system supplies defensible supporting documentation.