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Measurement of pain management medical knowledge

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Introduction: House officers in the Department of Anesthesiology at LSU Health Sciences Center—Shreveport take a one-month clinical rotation in Pain Management. The purpose of this study was to utilize the technological advantages provided by CD-ROM-based learning to measure improvement in medical knowledge.

Methods: With approval from the Institutional Review Board, an instructional CD-ROM (Seward Learning Systems, Inc., Minneapolis) was used to provide the following general modules of medical knowledge: (1) Patient Assessment, which presented evidence-based methods for assessing and documenting patients' pain and plan of care, (2) Pain Anatomy and Physiology, which described pain from an anatomical and neurochemical point of view, (3) Pharmacologic Treatment of Pain, which presented pharmacologic principles and medication conversions and (4) Treating the Whole Person which discussed the role of complementary therapies in pain management. Learning objectives were: (1) Conduct an initial and ongoing assessment of patient pain, (2) Demonstrate how to educate patients on their role in their pain management plan, (3) Effectively document patient plan, (4) Describe how pain is transmitted, (5) Discuss the causes of persistent pain, (6) Identify how pain therapies modulate pain, (7) List and describe pharmacologic interventions, and (8) Discuss integrated therapies for pain management. Residents took a pretest, comprised of 40 randomly selected questions based on the learning objectives. These questions came from the question database provided with the CD-ROM. The resident then stepped through the learning modules and took a posttest, comprised of another 40 randomly selected questions. Residents were allowed to take the CD-ROMs home and go through them at their leisure. Paired *t*-test was used to evaluate improvement in knowledge, with significance defined as $p < 0.05$.

Results: Fifteen residents were evaluated. Pretest scores were (mean \pm SEM) 29.1 ± 0.6 , compared to posttest scores of 32.7 ± 0.4 ($p < 0.001$). Correlation of pretest to posttest scores was 0.306 ($p = 0.268$). Average improvement in scores was 3.6, with a 95% C.I. between 2.2 and 5.0.

Conclusions: Medical knowledge regarding pain was significantly increased and documented. Previous knowledge did not correlate with new knowledge acquired. Inherent in a machine approach to measurement of medical knowledge is consistency of material, tight control of the content of learning material exposed to each resident, and a less time-pressured learning environment for the residents. The CD-ROM provided a readily available approach to communicating and documenting increase in medical knowledge associated with the management of pain.

