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A Beta Test of a Computer-Assisted Instruction Module in Improving Dermatologic Physical Exam Skills in Third Year Medical Students

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Introduction: Third year medical students at UMass. Medical School have only a brief exposure to dermatology during their first two years, resulting in limited skills in dermatology physical diagnosis. While other skills of the physical exam – e.g. the cardiac exam, the abdominal exam – are taught in the first 2 years and are applied and refined with repetition and instruction during students' clinical rotations, dermatology remains limited in its exposure and instruction during the third year. This may prevent students from gaining the needed physical diagnosis skills in this important clinical area. Given this scenario, a computer-assisted instruction module was created and beta-tested to improve students' physical diagnosis skills in dermatology.

Method: A computer-based dermatology physical diagnosis presentation was created using Microsoft PowerPoint to instruct third year medical students in dermatology physical exam skills. Each slide presented students with a dermatology physical exam finding, a brief description, and a picture. In order to test the students' knowledge of dermatology physical exam findings, a 23-item multiple-choice exam was created using XCom Exam Composer. 9 questions dealt with knowledge of verbal descriptions of lesions, while 14 questions dealt with the identification of lesions. The test was administered both before and after the presentation to 15 students taking a required 6-week Family Medicine clerkship at UMass. Medical School.

Results: 13 out of the 15 sampled students completed the curriculum. The average pre-test score was 18.4/23 questions correct (80%); the average post-test score was 20.5/23 questions correct (89.1%) - with an average improvement of 2.1 points (9.1%). These results (i.e., the increase in scores post-test) were statistically significant using both a parametric paired t-test ($t = 2.720$; $p=.019$) as well as a non-parametric Wilcoxon Signed Ranks Test to take the small sample size into account ($z = 2.508$; $p=.012$).

Discussion: This computer-assisted instruction in dermatology significantly improved students' physical exam skills, as measured by this multiple-choice exam. Informal comments were positive: students enjoyed the module, and appreciated the increased exposure to dermatology. Future studies are needed to evaluate student experience during this module, as well as their competence and confidence in diagnosing dermatologic lesions. Also, the Family Medicine Clerkship faculty intends to evaluate this module with a larger population of students, including those at different stages of their third year medical training, in order to examine the module's effects. Furthermore, studies using a larger population are needed to evaluate the

benefit and cost-effectiveness of this computer-assisted instruction program versus traditional book-based instruction.