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# Online learning in a dermatology clerkship: Piloting the new American Academy of Dermatology Medical Student Core Curriculum

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**Background:** Multiple studies have shown that both current and future primary care providers have insufficient education and training in dermatology. To address the limitations and wide variability in medical student dermatology instruction, the American Academy of Dermatology (AAD) created a standardized, online curriculum for both dermatology learners and educators.

**Objective:** We sought to determine the impact of the integration of the AAD online curriculum into a 2-week introductory dermatology clerkship for fourth-year medical students.

**Methods:** In addition to their clinical duties, we assigned 18 online modules at a rate of 1 to 3 per day. We evaluated knowledge acquisition using a 50-item, multiple-choice pretest and posttest. Postmodule and end-of-course questionnaires contained both closed and open-ended items soliciting students' perceptions about usability and satisfaction.

**Results:** All 51 participants significantly improved in their dermatology knowledge ( $P < .001$ ). The majority of students found the modules easy to navigate (95%) and worth their time (93%). All respondents supported the continuation of the modules as part of the dermatology clerkship.

**Limitations:** Without a control group who did not experience the online curriculum, we are unable to isolate the specific impact of the online modules on students' learning.

**Conclusion:** This study demonstrates the successful integration of this educational resource into a 2-week, university-based dermatology clerkship. Students' perceptions regarding usability and satisfaction were overwhelmingly positive, suggesting that the online curriculum is highly acceptable to learners. Widespread use of this curriculum may be a significant advancement in standardized dermatology learning for medical students. (J Am Acad Dermatol 2013;69:267-72.)

**Key words:** clerkship; clinical; dermatology; education; medical; medical students; online curriculum; teaching.

Multiple studies have shown that both current and future primary care providers are not given adequate education and training

in dermatology, resulting in decreased proficiency in the diagnosis and treatment of common skin conditions.<sup>1,2</sup> A 2005 through 2007 needs assessment study

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in San Diego, CA, March 18, 2012. We also presented this research at the University of California, San Francisco, Medical Education Day, April 27, 2012.

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of community-based primary care providers and residents found numerous core dermatology topics that providers identified as very important in their practices, but which residents deemed inadequately taught in their medical schools.<sup>3</sup> These findings were supported by the results of a 2006 survey of 75 medical schools conducted by McCleskey et al,<sup>4</sup> which found a median of 10 hours of required preclinical and clinical dermatology instruction, representing less than 0.3% of their total 4-year education.

In 2007, the Medical Student Core Curriculum (MSCC) workgroup was established by the American Academy of Dermatology (AAD) to address this knowledge gap in dermatology by creating a standardized, online curriculum.<sup>5</sup> The result was the MSCC, a public and freely available educational resource for both dermatology learners and educators located on the AAD World Wide Web site (<http://www.aad.org/education-and-quality-care/medical-student-core-curriculum>).<sup>6</sup> Designed to provide students with essential core knowledge in dermatology, this online curriculum includes 34 case-based learning modules, 10 instructional videos, and numerous test questions for self-assessment.

We piloted part of the online curriculum during the development process, before its publication on the AAD World Wide Web site. We incorporated 18 of the 34 AAD online modules into our 2-week introductory dermatology clerkship for fourth-year medical students. We assessed knowledge acquisition based on precurriculum and postcurriculum testing and report on learners' perceptions about usability and user satisfaction with the online modules.

## METHODS

### Setting and participants

This study was conducted at the University of California, San Francisco (UCSF). All fourth-year medical students enrolled in the dermatology clerkship over a 5-month period (July through November 2011) were invited to participate in the study, including visiting students from other institutions. The dermatology clerkship is an elective rotation that enrolls

approximately 75 to 90 students per year. On average, one quarter of the UCSF graduating senior students choose to take this elective each year. The UCSF Institutional Review Board approved this study.

### Description of curriculum

The AAD online curriculum was developed applying the 6-step approach to curricular development in medical education outlined by Kern et al.<sup>7</sup> The goals and objectives were based on prior needs assessment studies,<sup>3,4,8</sup> and then agreed upon by workgroup members using a modified Delphi consensus process. The learning objectives received input from medical educators in other specialties, including family medicine, pediatrics, and internal medicine. The workgroup chose to use clinical cases in the online modules to help promote learners' critical thinking and decision-making skills. In addition to multi-institutional authorship, the modules were further modified via a peer-review process conducted by workgroup members and feedback from a pilot group of medical students. The learning mod-

ules include: case-based PowerPoint presentations (Microsoft, Redmond, WA), video instruction of the dermatologic examination and common dermatologic procedures, hyperlinks to other dermatology Internet resources, test questions, and multiple images featuring a range of skin pigmentation.

Eighteen of the 34 AAD online modules were incorporated as a required component of our 2-week elective. The 18 modules included common skin diseases, dermatologic procedures, and basic principles of dermatologic therapies (Table I). Students accessed the modules via our institutional electronic learning management system. The modules could be viewed directly from the Internet or downloaded to a personal computer. We assigned students specific modules (1-3) each day in addition to their usual clinical duties and required attendance at didactic sessions and departmental conferences. A dermatology textbook was made available during the rotation. Students were recommended to read textbook chapters that corresponded to the assigned AAD module.

### CAPSULE SUMMARY

- The American Academy of Dermatology (AAD) Medical Student Core Curriculum is a public and freely available educational World Wide Web-based resource for dermatology learners and educators.
- In combination with a clinical experience, the AAD online modules were effective in teaching core dermatology knowledge. Students' perceptions regarding usability and satisfaction were overwhelmingly positive, suggesting that the online curriculum is highly acceptable to learners.
- Widespread use of the AAD online curriculum may be a significant advancement in standardized dermatology learning for medical students.

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