Remote learning for medical student-level dermatology during the COVID-19 pandemic

To the Editor: Traditionally, online resources available to medical students for learning dermatology have been designed as adjuncts to in-person clerkships. The coronavirus disease 2019 (COVID-19) pandemic has created an unmet and unprecedented need for remote structured learning for medical students interested in dermatology. Medical student clinical exposure has been limited to ensure their safety and to conserve personal protective equipment.[1] In light of the deconstruction of the traditional hands-on clerkship environment,[2-4] medical schools struggle to educate their budding dermatologists. Proposed solutions include implementation of teledermatology and integration of supplemental online resources into the medical student-level dermatology curriculum.[5]

We envision the mission of a third- and fourth-year medical student dermatology elective curriculum to render a medical student competent in the art of history taking, physical examination, documentation, and therapeutic management of common dermatoses (Table I). While social distancing and minimum room occupancy guidelines are in place, familiarizing medical students with routine dermatologic patient encounters is challenging.

Historically, clinical rotations reinforce recognition of common diagnoses based on random disease state encounters, making the set of clinical entities learned variable from student to student depending on their relative clinical environment, subspecialty area of the attending, season, and patient population. We propose a solution to both the haphazard exposure in normal times and limited exposure in COVID-19 times with a comprehensive, standardized, and actionable curriculum to learn dermatology remotely.

A comprehensive dermatology curriculum begins with training students on history taking and performing a dermatologically directed physical examination. The next step entails describing morphology and understanding the pathophysiology of common diagnoses. We achieve these 2 steps with Zoom (Zoom Video Communications, San Jose, CA) and PowerPoint (Microsoft, Redmond, WA) lectures, which can be recorded for future review, while using before and after assessments on SurveyMonkey (SMVK Inc, San Mateo, CA) and other platforms to highlight important points, thereby inducing the learner to have a focused guide with which to approach the lectures.

Table I. Components of a comprehensive dermatology curriculum (third- and fourth-year medical students) with examples from bit.ly/dermedu

Component	Example
History taking and physical examination	PDF of lecture: https://bit.ly/DermEduLecturePDF Recording of lecture: Class #1 at https://bit.ly/DermEduZoomElective
PowerPoint* lectures on morphology and disease pathophysiology	https://bit.ly/DermEduMSIICourse
Pre-and post-assessments	https://bit.ly/DermEduQuizzes
Side-by-side comparative analysis of clinical photographs	https://bit.ly/DermSwipeApp†
Clinicopathologic correlation case study	https://bit.ly/DermEduZoomElective
Textbook and videos illustrating safety and technique of dermatologic procedures	*Safety in Office-Based Dermatologic Surgery* and https://bit.ly/DermEduProcedures

*Microsoft, Redmond, Washington.
†Mobile app, available on iOS (Apple, Cupertino, CA) and Android (Google, Mountain View, CA).

At this point, repetitive exposure to clinical photographs will enable students to recognize dermatologic pathology in diverse patient groups. A deliberate effort should be made to incorporate photos representative of all skin tones. In our experience, asking students to pick one disease out of a side-by-side comparative dyad enhances the efficiency of learning by forcing in-depth analysis of the correct answer while doubling the volume of photographic exposure.

Next, students can progress to case-based clinicopathologic correlation focused on clinical presentation, histology, and management of common dermatoses. We have found starting with a photo, followed by a second-order multiple choice question, is effective.

Finally, all of the above can be done in parallel to learning dermatologic procedures. We encourage a flipped classroom approach, with video learning by the student before one-on-one instruction with skin substitutes and supplemental visual learning with a textbook on dermatologic procedural safety. When

the opportunity finally arises to see the patient with the random presentation of dermatologic disease, the student can draw upon their structured morphologic drilling and case-based reinforcement to create a differential diagnosis, provide workup, and therapeutic management.

We have outlined our strategy and give examples of a fully actionable and freely available online curriculum (bit.ly/dermedu).

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