

Lessons That Are Never Forgotten—The *Unknown* Session

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Dermatology residency programs feature a variety of didactic conferences. Many common teaching activities include book reviews, journal clubs, and grand rounds. One familiar activity



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featuring active learning is called “Kodachromes,” morphology conference, or simply *unknowns*: an attending physician shows dermatologic images to residents, and they describe what they observe, use the morphologic clues to provide differential diagnoses, and settle on a final diagnosis. Although most residents find *unknowns* stressful, the lessons learned will often remain in their memory for years, if not for their careers.

After 39 years in academic dermatology, 32 of which were as a residency program director, I have had the privilege of running more than 1200 *unknown* conferences with hundreds of residents and students. I have learned a lot myself, but also have heard many anecdotes from graduating residents, often 10 or more years into their careers, about how a current patient’s diagnosis was secured on first sight because it was “the one I missed and have never forgotten.” I also surveyed residents yearly regarding the perceived benefits of all didactic and clinical experiences, and every year *unknowns* led all comers as the most valuable. What is it about *unknowns* that make them such an essential part of learning in dermatology?

The basic currency of *unknowns* is the image, which in days past was the slide or Kodachrome,¹ and nowadays is any image captured in clinics, textbooks, journal articles, or on the Internet. With such a large inventory, how does one choose what to show? I think about recent patients seen in the clinic or in grand rounds whose experience may reveal a knowledge gap in a resident, and when a gap exists for 1 resident, it almost always exists in other residents. Journal articles, book review assignments, patients who may experience dire consequences if not diagnosed accurately (eg, paraneoplastic disorders, syphilis, or a variety of skin manifestations of systemic disease), or patients I have seen with atypical findings, rare conditions, or unusual stories are others that I consider. I may have asked a resident to read about a particular condition; the *unknown* gives me the chance to see if they have. If so, they look good to me *and* to their peers; if not, only I know.

With more than 2000 dermatologic entities with a myriad of variants, residents will see only a fraction of them in the clinic or on the hospital wards. There are many conditions that they will not be able to diagnose without having seen them before. I try to make sure residents see a wide variety of conditions among a diverse patient population. I have an extensive collection of photographs of patients I have seen, so I am able to share real-world information, such as laboratory test

results, findings of biopsy specimens, and long-term follow-up, which I believe makes the lessons more fun and memorable.

I try to vary images across the spectrum of age, sex, and skin tone. Many recent publications, as well as institutional and departmental policies, have recognized the underrepresentation of diverse skin tones in educational materials and are emphasizing the need to show images illustrating dermatologic diseases in patients with all skin tones. A common technique that I use is showing side-by-side or sequential comparisons of the same diagnosis in different skin tones. This is critical for teaching learners to recognize colors, erythema, dyspigmentation, and variants of disease processes, as well as demonstrating the full spectrum of disease presentations for a given condition.

What is my approach to leading an *unknown* session? I always start with easy classic disorders and ask a student or new first-year resident to describe it and offer at least 1 diagnosis. Then we have a conversation regarding their observations, and I help the learner to see more clues and to think logically so that they move toward or away from general categories, such as tumors, infections, papulosquamous conditions, or others. Then I ask a more senior resident with more experience (never the same or less) to comment on the information so far. This gives the senior resident the opportunity to add more or different observations from the image, as well as to extend differential diagnoses or make the final diagnosis. As the correct diagnosis is made, I usually move through a wide variety of images in the hour that we have together. As the hour progresses, I show more uncommon or rare diagnoses, asking second-year residents and then senior residents to make the opening differential diagnoses, and probing as to why they are considering a particular diagnosis over another. This process allows the students and junior residents to hear how the more advanced residents think, and it helps them to visualize the day when they too will have the knowledge to make increasingly subtle observations and obscure diagnoses. It gives the junior residents the idea that in 1 year, they too may have such expertise.

I wish to emphasize how important exploring the incorrect interpretations of the physical findings and their meaning is to learning, for both the student and teacher. Considering each incorrect answer with a bit of detail often allows the learner to self-correct their path. It also helps me to understand why an individual learner may be experiencing confusion, which is often shared by others. I come away with a better understanding of common foibles, the larger content of what a learner knows or does not know, and knowledge gaps of a particular learner or learning group.

When slides, projectors, and carousels were used, learners worked independently, learning slowly but thoroughly, generating answers on their own, and sacrificing current performance for improved future recall, a concept reviewed by David Epstein in his book *Range*.² The basic idea is that by struggling on a journey to the right answer, memory is enhanced similar to life's journey and its recall. Hints and outright answer-sharing, such as take place through texting or via online chats, will improve immediate performance but will limit long-term learning. This is the challenge that attending physicians face with teaching in the digital age. How can it be addressed? Not by complaining, "Why isn't life like it used to be?" We are living today, with its current technologies and many opportunities.

Revealing that working alone in a stepwise manner maximizes long-term learning should be attempted, but in my experience, it is not successful with most learners. Whether it is the need to shine in their social groups, a feeling that one should not let others struggle, or wanting to be part of the *in* crowd, chatting will continue. So, attending physicians should take advantage of technology and run *unknown* sessions in an alternate manner. For example, a mobile device-based polling application commonly used by US medical schools allows for all learners to be connected individually to a teacher. After an *unknown* image is shown to the learning group, each learner is expected to send at least 1 differential diagnosis to the attending physician-teacher in a short period of time (eg, 30 seconds). The teacher may observe 90% of the group has the right answer, which to me means go forward quickly; they get it. On the other hand, if there are many responses across a wide spectrum of conditions, the teacher needs to investigate. This is an area that is rich in learning opportunities and effective at

closing knowledge gaps. Exploring the learners' thought process by asking individuals to explain what is right or wrong about each differential diagnosis allows the teacher to gain wonderful insights about each learner. This method makes it much harder to share answers because the group does not know what is coming next and everyone needs to be engaged and thinking all the time, generating differential diagnoses and explanations. Taking advantage of new and updated technology tools allows for variety in presentation styles, enhances what the teacher learns about the students, and keeps the students engaged through group learning and exchange. It also provides anonymity, so that all answers are only seen as a means to learning.

Kodachromes will live on in scanned image collections, and digital image acquisition continues to expand the availability of excellent images for *unknown* sessions. As we move into the next decade, the key principles of teaching with Kodachromes must live on so that clinical teaching thrives. This didactic experience should promote an inclusive and safe learning environment for all learners. My hope is that attending physicians create a respectful and open culture that allows learners to feel comfortable with sharing their thoughts and thought processes, even if they reveal areas for improvement. The environment should encourage learners to continue to spawn their own answers slowly, and attending physicians should allow the process to occur without judgment. We should celebrate the mastery of clinical reasoning—the approach taken to get to an answer, rather than simply to get the answer right. This is not only crucial for training our future master dermatologists, but most importantly for patients in need of a correct diagnosis.

ARTICLE INFORMATION

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