



Evidence Based Pathology

Editorial: On continuing to educate during these times

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There is no shortage of overused phrases related to the upheaval in patterns of behavior and expectations as a result of SARS-CoV-2 across nearly every walk of life. Yet, “in these confusing and challenging times”, the mildly inflexible annular organization of medical school curricula and its associated exam and application cycles generates a need to come up with flexible, creative solutions for student trainees. Medical school admissions activities include pursuit of students (and therefore future physicians) who demonstrate leadership, creativity, and adaptability to human challenges. SARS-CoV-2 has generated what seems to be an artificial environment where the pace to come up with creative solutions has only accelerated. Beyond the obvious arenas of virtual visits, safety protocols, and research and development for treatments, vaccines, and testing, medical education as a pipeline for future physicians is another arena where those that can more rapidly and creatively come up with adaptable, yet rigorous solutions will be leaders of service. Pathology is a specialty that is particularly well-suited for rapidly transitioning to spatial and temporal distance learning [1]. With the generation of virtual Pathology experiences, the field is able to offer students essential clinical hours and exposure to many of the components of the profession. With thoughtful consideration in the design, the execution of a virtual Pathology elective can leverage benefits of spaced repetition, flipped classrooms, grand rounds, and self-directed learning.

Using virtual slides or a microscope with the camera connected to one's computer screen, pathologists can recreate the environment of a teaching microscope with simple screen-sharing on virtual conferencing platforms [2-4]. Similarly, multiple students can view the image at once in real time, while the pathologist is pointing their mouse to direct the students' gaze. With participation in sign-out each day, students are able to engage with active patient cases in the kind of spaced repetition that facilitates early comprehension and retention, especially in the context of adult learning. The physician and students can discuss how the findings impact the patient's clinical course or what additional tests might be needed. Students can easily practice writing up a pathology report for the case (s) and share that with the pathologist for discussion.

Given the set-up of remote Pathology, it is simple to adapt the schedule each day to simultaneously best meet the clinical and educational goals of the experience. Beyond the clinical demands of a “sign-out” described above, there remains ample time to mix in sessions to

teach and discuss the key concepts that meet the objectives of the clinical experience overall, while also allowing for time to cover self-identified areas of interest. In this matter, the student can articulate these self-identified areas to the physician ahead of time and then leverage the flipped classroom approach to read and study the topic [5,6]. Historical slides and specimens related to the topic already available to the physician/the department can be utilized. With the aid of these visuals and the flipped classroom approach, there is ample opportunity for the kind of back and forth discussion that is essential to understanding the nuance of a topic at greater depth.

Many institutions have already moved Grand Rounds presentations to a virtual medium due to restrictions allowing only essential staff and essential procedures at medical campuses. Subsequently, the adjustment period to develop the protocols, staff, and infrastructure to execute such delivery has now already been established. Moving forward, it should therefore not be arduous to continue this practice of making Grand Rounds accessible. This facilitates easy remote attendance for medical student trainees to join in on such teaching events as well. Here, medical students can easily join in, watch the presentations, ask questions, and learn more of the granular details of the field and the associated research questions being asked to address gaps in patient care.

Nevertheless, there are areas within the specialty of Pathology that remain more challenging to teach with a fully virtual experience. Autopsies and gross dissection of surgical specimens provide a bit more of a challenge but creative approaches are possible. A camera situated on the dissection field may create an opportunity to at least observe and discuss, if one cannot directly participate in the dissection process.

With no known definitive end in sight regarding the level of potential volatility that resides in the months ahead, it is not reasonable to try to wait this situation out in hopes of returning to prior strategies. It is imperative that alternative solutions are generated now to ensure future physicians will enter residency as prepared as possible. Therefore, continuing opportunities such as distance clinical Pathology clerkships are essential to that goal. There will invariably need to be adaptations as gaps arise in this new format, but that should not intimidate one from starting. Leverage the strengths, recognize the shortcomings, and make reasonable accommodations to minimize the impact of those shortcomings. Additionally, most medical students have

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limited exposure to Pathology during the clinical years unless they intentionally seek it out. The field of Pathology has a unique opportunity to help be leaders in medical education in this moment. By becoming one of the few specialties to offer remote experiences in these times when choices are reduced, more students might jump at the opportunity and find themselves thoroughly enjoying it. These opportunities also provide venues to engage students in discussion about Pathology and Laboratory Medicine and to answer questions for those students who might be contemplating a career in pathology. The relationships and potential mentorship opportunities that may develop and be built from interacting with individuals in the field are valuable. In the end, just like there is tremendous diversity within human disease, there will likely not be a one size fits all approach to this. This is not only just OK, but is actually encouraged. The flexibility to design an experience that best utilizes the physician's, department's, and institution's strengths is the autonomy and variety that helps make teaching and mentoring

rewarding.

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