

Preface

This text developed and evolved to meet three pedagogical goals we deemed essential for the allied health and pre-professional students in our undergraduate microbiology courses. These goals were:

1. To expose our students to real life clinical situations they are likely to encounter as practicing professionals.
2. To encourage development of critical-thinking skills, allowing students to integrate presenting symptoms and diagnostic test results to determine the etiology of infection.
3. To promote the long-term retention of relevant factual data.

While case study analysis in the microbiology classroom is a superior active learning technique that encourages students to synthesize and integrate laboratory and lecture content for practical application, it usually has a significant flaw: The necessary background material is often condensed and formalized into a terse, technical presentation. Although an impersonal, clinical delivery of relevant facts is an efficient communication mechanism, it hardly simulates the experiences a future healthcare provider will encounter when acquiring a patient history. Clinically presented cases spoon-feed information and deny students the opportunity to develop the sleuthing skills a practitioner needs to assess pertinent details for diagnosis and treatment. By selectively providing extensive technical data in this unrealistic format, students are encouraged to make biased decisions while analyzing an infectious disease case.

We modified the use of microbiology case studies to maintain their value as tools that result in critical thinking and knowledge retention, while providing a more realistic context for preparing future healthcare professionals. Consequently, we have generated real-life, personally oriented microbiology cases appropriate for students in nursing, pharmacy, and other allied health disciplines (pre-med, pre-PA, CLS, etc.). This format presents material as a story about the patient as well as information regarding their family circumstances, personal characteristics, and individual motivations. Interwoven in these cases are relevant clinical data and laboratory analyses. In this way, students are exposed to medical scenarios that more accurately simulate true patient/care provider interactions. This realistic experience nurtures critical-thinking skills as students must rely on their own investigative and integrative abilities to solve the case.

Our recent research comparing student learning with traditional, clinical case formats versus personally oriented scenarios indicates other benefits offered by this teaching tool. The personal format enhanced patient empathy, which in turn appears to improve knowledge retention by firmly connecting the student with the patient's plight. Because the student is engaged at an intensely personal level,

this format also highlights patient compliance issues and better demonstrates how unexpected complications make each case unique.

In addition to the use of a personal case format, this text offers several other advantages to facilitate student learning. For example, leading questions are incorporated into the body of the case to guide students in their analysis rather than simply listing questions at the end of the exercise. Case questions target the topics of etiology, transmission, treatment, prevention, pathogenesis, and diagnostic procedures and have been color-coded to highlight the topic. Another benefit of this text is the manner in which new terminology is addressed. Most science books provide a concluding glossary so students can look up the definition of a newly introduced medical term. Unfortunately, with this format, students must interrupt their reading, turn to the back of the text, locate and learn the term, return to their previous place, and resume case analysis. This results in student frustration as concentration is disrupted, impairing analysis. To avoid this problem, new terms are introduced in boldface within the text with their definition provided in the adjacent column. Students can quickly learn new terminology with minimal disruption to reading and solving the case.

While case studies can be incorporated into your curriculum in a variety of ways, we have found analysis particularly effective when performed by cooperative learning teams.

We also use case studies to help students develop written and oral communication skills. Having learning groups turn in written answers for grading can be used as an opportunity to reinforce technical writing skills. When class size is smaller, we have found it helpful to have students give an oral presentation of their case analysis to their peers. Grading with this format allows your students to hone their public speaking abilities, again mastering skills needed as a practicing medical professional. Despite the fact that extra work is involved, student evaluations of our microbiology courses consistently indicate that our nursing, pharmacy, and allied health students enjoy performing case analysis and appreciate this realistic chance to prepare for their future careers.

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