Editor's Note

Case-Based Teaching and Learning

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Introduction

As a clinical cardiologist, I have spent all of my life learning cardiology, and as an academic cardiologist I have spent most of my life teaching it.

Whether learning or teaching—presenting to students, residents, cardiovascular train-

ees, those attending continuing medical education courses, and so forth—I always stress the importance of understanding the underlying pathology, physiology, imaging, and pharmacology related to the particular clinical situation. It has been my personal practice to evaluate original data on patients. Thus, I insist that students at any level do likewise—that they personally review the electrocardiogram, the chest x-ray, the echocardiogram, the angiogram, magnetic resonance imaging, or computed tomography, as the case warrants. Reading a report of the investigation is not good enough if one really wants to understand and integrate the information with the clinical situation in order to arrive at a rational assessment and plan.

Didactic Lecture vs. Case-Based Presentations

All teachers and all learners have experience with the lecture format. In 2006, most teaching of large groups is done in the lecture format. A classical example is Medical Grand Rounds, which usually consists of one individual speaking for an hour on the chosen subject in such detail that the audience may be left confused and with very little understanding of the important points related to the lecture. That, of course, is not always the case, but in my experience Medical Grand Rounds has lost its luster.

As a medical student, resident, fellow in training, and young faculty person at Johns Hopkins from 1956–1974, I enjoyed Medical Grand Rounds presented in a different format. During that time, Medical Grand Rounds consisted of an hour and a half on Saturday morning in which four cases were presented and discussed. A resident presented the case (5 minutes) and a faculty person discussed it (15 minutes). The discussion was focused on the patient's clinical presentation, physical exam, laboratory examination, and therapy. These

were wonderful sessions that don't seem to exist anymore—perhaps because it takes more effort to give a short, organized presentation that must be focused on essentials and a take-home message than it does to give a long one.

I had the pleasure of attending a Vascular Biology Working Group meeting in Orlando, Florida, in April of 2005. Drs. Carl Pepine and Andrew Selwyn chaired that meeting and both emphasized to the audience their perception of the value of case-based learning versus didactic lecture. At the end of the session, most of the rather sophisticated audience agreed that there should be some sort of combination of case-based learning and some didactic lecture. Dr. Pepine emphasized the need for integrating scientific information with the clinical presentation and particularly emphasized the integration of current guidelines relating to that patient presentation.

A General Approach to Case-Based Teaching and Learning

Dr. Andrew Selwyn outlined the general approach to case-based learning by emphasizing that the learning experience should start with a case presentation to include present illness, past medical history, physical exam, and simple laboratory tests. These data allow development of a differential diagnosis. Once that is established, special tests can be performed to develop a working diagnosis from which a global risk can be estimated and thus a treatment plan initiated. Once that is underway, monitoring the response to treatment is undertaken. Using this approach, one can integrate the evidence for risk at each stage of the process, the global risk assessment, the selection and interpretation of tests, the setting of therapeutic goals for each element of the treatment plan, and the selection of measures for determining response to therapy.

At the University of Florida, we hold a weekly case conference in which cardiovascular fellow trainees present two clinical cases. Cardiovascular faculty and fellows and often medical residents spend one half hour on each case in discussion of the above parameters. This is probably our best clinical conference because it is focused on the patient and it integrates much of the imaging, the thought processes, and the clinical trials and guidelines that go into the management of that particular patient.

To be fair to the didactic lecture, the above strategy is relatively easy to implement with a small group (30–40 participants). It becomes much more difficult for a large audience of thousands but it can be accomplished if the case is discussed

by a panel representing the audience and the focus of the discussion is directed by the individual who presents the case.

I find the case-based format particularly enjoyable and I must admit to oftentimes taking more home from that format than from a Medical Grand Rounds-style one-hour lecture by an expert who is not completely aware of the audience's background or interests. Those who present information at these sessions should recognize that the majority of the audience is not subspecialized in their area; presentation is therefore more appropriately directed to the approximate level of the third-year resident in medicine than to the subspecialty level. This is

easily done if the focus of the discussion is a clinical case from which several teaching points are derived.

Reference

Selwyn A, Pepine CJ: Vascular Biology Working Group (discussion of case-based learning). Orlando, Fla., April, 2005.

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