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A Message to Medical School Promotion Committees: Proper Credit for Peer-Reviewed Online Educational Materials

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Guests: Dr. Nader Rifai is Editor-in-Chief of *Clinical Chemistry*, Professor of Pathology at Harvard Medical School, the Louis Joseph Gay-Lussac Chair in Laboratory Medicine and Director of Clinical Chemistry at Boston Children's Hospital.

Bob Barrett: This is a podcast from *Clinical Chemistry,* sponsored by the Department of Laboratory Medicine at Boston Children's Hospital. I am Bob Barrett.

The standard course for academic promotion has primarily been based on the number and quality of peer-reviewed papers published and the number of peer-reviewed grants received. Other academic activities such as teaching, book editing, mentoring, and service to scientific organizations have also been considered. But this process often falls short for those whose interests are in biomedical education or in translational and clinical applications.

In the June 2019 issue of *Clinical Chemistry*, Nader Rifai, Brian Smith, and Maureen Connelly published an editorial titled, "A Message to Medical School Promotion Committees: Proper Credit for Peer-Reviewed Online Educational Materials." Today, we're joined by the lead author of that editorial. Dr. Nader Rifai is Editor-in-Chief of *Clinical Chemistry* and Professor of Pathology at Harvard Medical School, the Louis Joseph Gay-Lussac Chair in Laboratory Medicine and Director of Clinical Chemistry at Boston Children's Hospital. So, Dr. Rifai, what prompted you to write this editorial?

Dr. Nader Rifai: Bob, in order to properly answer this question, let me provide some historical perspective. Traditionally, research publication output and awarded grants were considered the cornerstone for academic promotion. Of course, teaching, mentoring, and other scholarly activities were taken into account. These criteria, however, were later revisited in order to emphasize the importance of excellence in education and teaching as well as clinical service for those associated with medical schools.

As a result, various promotional tracks were created to better address these needs and to award excellence in areas other than independent research. Although these progressive modifications have addressed the needs of that period, now with the great advancement in technology and communication and they are used in actually delivering education, novel teaching tools and methods have been

created and used around the world, yet promotion committees in many universities have not properly evolved to recognize and adequately credit such efforts. So, we hope that this editorial will provide the impetus for such a discussion.

Bob Barrett: Can you give us an example of what type of educational programs you're referring to?

Dr. Nader Rifai: I will be glad to. The one with which I am most familiar is the NEJM Knowledge+ for laboratory medicine known as the Learning Lab. This program is based on the concept of adaptive learning and is a collaborative effort between *New England Journal of Medicine*, AACC, and Area9 Lyceum, a leader in education technology. So, the way adaptive learning works is through the use of sophisticated computer algorithms, this system interacts with the user and identifies the areas in which the learner is deficient. Then it provides the appropriate learning materials to remedy the deficiency. When completed, this program will have over 120 courses spanning all disciplines of laboratory medicine.

So, each course consists of 100 to 150 learning objectives. Each of which is paired with two probes and a learning resource. Prior to release, each course undergoes rigorous peer-reviewed and beta-testing evaluation. It takes an author over 300 hours to actually prepare such a course. So, it is not a trivial matter to build this peer-reviewed and sophisticated course. It follows a very rigorous process.

Bob Barrett: Is this the adaptive learning approach commonly used in medical education?

Dr. Nader Rifai: The use of this approach in the medical education is fairly new. For example, since it was first introduced five years ago, about 24,000 clinicians have used the NEJM Knowledge+ product. In contrast, almost 22 million students in higher education and 43 million K-12 students in the United States have used it in the past six years.

So, I envision the utility of this approach in medical education increasing in the near future.

Bob Barrett: Why did you only direct your approach to medical schools?

Dr. Nader Rifai: That's a good question, Bob. The argument of properly crediting novel cloud-based educational approaches and programs is generalizable to the schools of arts and sciences. However, medical schools have some distinct features. All medical schools either own or are associated with hospitals that provide clinical service to patients and train all future professional in the health and medical sciences. So, unlike other academic disciplines, they

actually provide a product. And faculty members spend most of their time taking care of patients rather than conducting their independent research.

Furthermore, faculty members spend considerable amount of their time training the next generation of clinicians and clinical scientists, and some develop the required continuing medical education materials using novel approaches. So, these dedicated and busy faculty members must be given the proper credit for the clinical services they perform and the sophisticated educational materials they develop.

Bob Barrett: Doctor, in your view, why are promotion committees in certain universities slow in properly rewarding the authors of these materials?

Dr. Nader Rifai: Maybe because the concept of peer-reviewed and innovative online education materials in medicine is relatively new. Also, remember Bob, the medical and academic establishments are very conservative and are usually slow to respond to changes. Also, some people say that there is no metrics that have been validated for such activity, an explanation that I personally have a problem with and I will tell you why.

Now, during the evaluation process for academic promotion, the number of citations received by original reports and measures such as the H-index of an evaluated faculty member to assess the impact of their work are examined. Although this may seem as logical and reasonable approach to use, it very much depends on the research area of the evaluated investigator. So, certain areas of research are relatively small, like mycology, for example. And even an excellent article in this field may not accumulate many citations compared to an article in a very large and active area of research such as biomarkers of cardiovascular disease or cancer.

So, the existing system is not perfect. In fact, it is far from it. Another example, take book chapters, there is no metrics for evaluating a book chapter. They are typically considered somewhat subjectively as testimonial to the candidate's strong dedication to education and perhaps level of reputation, but nothing quantitative. In contrast though, cloud-based educational materials can in fact be evaluated analytically and objectively. You can look at the number of users, number of downloads, the length of time spent on a course or a lecture, and whether the user was able to answer the questions correctly. These are all obtainable measures.

Bob Barrett: Is the issue of not properly rewarding authors of these materials a universal one or is it just encountered here in the US?

Dr. Nader Rifai: I really believe that this is a worldwide issue. Some universities are more progressive, of course, than others and already properly award their faculty members for this needed effort. Others are lagging behind. Hopefully, with this discussion, we can all be on the same page and award properly the authors of such materials.

Bob Barrett: And how are you planning to disseminate this information to promotion committees?

Dr. Nader Rifai: As you may have noticed, two of my co-authors on this editorial are prominent academicians in deanship positions. We are exploring various means to get the editorial to the hands of the chairs of tenure and promotion committees at medical schools, and to also bring it to the attention of the national academies.

Bob Barrett: Finally, Dr. Rifai, what is the perceived danger of failing to appropriately reward the authors of these materials?

Dr. Nader Rifai: If promotion criteria do not evolve to recognize these educational platforms, faculty members will either miss the opportunity of such innovations, or rethink whether the academic award system fairly credits their efforts in whether they should invest their time and energy in developing these materials. And that indeed would be a great loss to the academic community.

Bob Barrett: Dr. Nader Rifai is Professor of Pathology at Harvard Medical School, the Louis Joseph Gay-Lussac Chair in Laboratory Medicine and the Director of Clinical Chemistry at Boston Children's Hospital. He co-authored an editorial urging promotion committees to give proper credit for peer-reviewed online educational materials, that appeared in the June 2019 issue of *Clinical Chemistry*. I'm Bob Barrett. Thanks for listening!