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Engaging Pathology Residents in Clinical Chemistry: The Essential Ingredient Is a Committed Teacher
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Guest: Dr. Gurmukh Singh is the Sheppard Chair in Clinical Pathology and is a professor and Vice Chair of Pathology at the Medical College of Georgia at Augusta University.

Randye Kaye: Hello and welcome to this edition of JALM Talk from the *Journal of Applied Laboratory Medicine*, a publication of the American Association for Clinical Chemistry. I'm your host, Randye Kaye. Clinical chemistry may comprise over half of the clinical pathology test volume at many institutions. Still, it's common belief that many pathology residents failed to show interest or engagement in clinical chemistry. This lack of engagement can lead to board exam failures or to a lack of preparedness of trainees to advance as clinical laboratory directors. The National Academy of Medicine has recognized pre-analytical considerations and post-analytical test interpretation as major areas for improvement of diagnostic errors. Therefore, pathology trainee knowledge in clinical chemistry has become increasingly important.

A Special Report in the March 2021 issue of JALM describes the implementation of a structured teaching program in clinical chemistry with an objective to increase trainee knowledge and engagement. The first author of the report and our guest for this podcast is Dr. Gurmukh Singh. Dr. Singh serves as the Sheppard Chair in Clinical Pathology and is a professor and Vice Chair of Pathology at the Medical College of Georgia at Augusta University.

Dr. Singh, welcome. Why do pathology residents need special efforts to promote engagement in clinical chemistry?

Gurmukh Singh: The dominant activity in pathology is examination of tissues for diagnosis and it is primarily a visual activity. Chemistry, by contrast, has little data for visual interpretation and requires a thought process to establish the clinical issues. Most pathologists make their living by Part B Billing for their anatomic pathology work, whereas there is little opportunity for Part B Billing in chemistry.

Randye Kaye: So, how have you promoted this engagement at your institution? I mean, can you summarize some of the strategies described in your report?

Gurmukh Singh: Yes, ma'am. In most training programs, pathology residents have a three-month period earmark for clinical chemistry

rotation, that may be in one episode or divided in two or three episodes. The program at Augusta University has a similar arrangement. However, by meeting with residents twice a month for one-hour long teaching exercises, the program has in effect converted the clinical chemistry training into a four-year course. The twice monthly exercises are in addition to the usual three-month rotation. This constant exposure to chemistry has promoted engagement.

The second maneuver has been to engage residents in clinical investigation in chemistry. Of the 13 residents currently in the program, 12 have published or are engaged in developing a publication in clinical chemistry. While addressing lab team management, I include personal finance in the discussion and have challenged our residents to perform SWOT analysis on themselves and strengthen their core competencies. These activities have generated visible interest in that discipline.

Randye Kaye: Wow. Well, there had to have been some challenges that you faced in refining these teaching strategies. Can you talk a bit about the challenges and if there are any potential pitfalls?

Gurmukh Singh: One challenge is to have a committed teacher who promotes engagement by what may be reluctant participants, and makes it profitable for residents to engage in clinical chemistry investigative studies. Pertinent to this is that the teacher needs to have an organized clinical chemistry investigation program, into which the residents can be plugged in even if they lack prior experience in research. The issue to watch out for is the learning style of the residents and to make adjustments to their learning style.

Randye Kaye: Well, let's talk more about that, the different learning styles of the trainees. How do you accommodate for those styles?

Gurmukh Singh: It's easier to adapt my teaching style to the residents' learning style and then individual or small group interactions. It's impractical to accommodate the varied styles of a dozen individuals in the twice monthly sessions that are ran mostly on our Socratic tutorial format. Some of the learners have expressed discomfort with the Socratic method. However, this style has been effective in improving engagement and examination scores in clinical chemistry.

Attempts at assuaging their feelings have not been successful in a minority of the instances, and that may be a price to pay for using this method. Making that question pool of about 600 questions to introduce various issues has been well-received, and in response to the suggestions by residents I have included answers to the questions so that they can assess their state of knowledge by themselves.

- Randye Kaye: I see. So, let's talk a little bit about teaching to the test, teaching primarily to prepare residents for the board exams rather than maybe providing real-world experience. There is some controversy over which is the best approach, so what's your stance on this?
- Gurmukh Singh: I understand the criticism of teaching to the test, but I do that without any apologies. My justification is that in the process of learning for the test, the residents also happened to acquire proficiency in clinical chemistry, and I see improvements in performance on examinations as a fringe benefit. An analogy is Six Sigma Business Method that aims to improve the bottom line, but it also improves quality as a fringe benefit.
- Randye Kaye: All right. Thank you. So, you talked about improvements, and I guess my last question is do you have any kind of objective evidence that you've gathered to demonstrate that your teaching approaches have resulted in these improvements?
- Gurmukh Singh: Yes, ma'am. And I did statistical analysis of the examination results, and since the implementation of the revised curriculum the residents in service examination scores have improved significantly and are significantly better than scores in other subjects. Having a record of publication and peer-reviewed PubMed List of Journals has facilitated the residents getting into the fellowship programs of their choice, and the icing on the cake has been successful participation in intra and extra mural awards programs by residents presenting their clinical chemistry research and that has been a particularly satisfying outcome for the participants.
- Randye Kaye: All right. Very interesting. Thank you so much for joining us today.
- Gurmukh Singh: Thank you, ma'am.
- Randye Kaye: That was Dr. Gurmukh Singh from the Medical College of Georgia at Augusta University describing the JALM Special Report "Engaging Pathology Residents in Clinical Chemistry: The Essential Ingredient Is a Committed Teacher." Thanks for tuning in to this episode of JALM Talk. See you next time, and don't forget to submit something for us to talk about.