Teaching Laboratory Management to Pathology Residents

What Skill Set Are We Trying to Impart?

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The article by Weiss and colleagues on a consensus curriculum for laboratory management training for pathology residents provides much useful information about a long-standing challenge. Their report states where we are as a field in laboratory medicine with regard to education on management issues. The data in the article now beg the answers to 2 questions: “What do we do with these answers?” and, more fundamentally, “What are we trying to achieve by teaching laboratory management to pathology residents?”

Having been in the field of laboratory medicine as a clinical laboratory director for the past 26 years at the University of Pennsylvania (Philadelphia), the Massachusetts General Hospital/Harvard Medical School (Boston), and Vanderbilt University School of Medicine (Nashville, TN), I have made several attempts to develop for residents a management training program that is truly effective. A successful training experience would be one about which the residents are enthusiastic learners and from which they develop measurable management skills that are more than just common sense; and the program should stand the test of time by improving continuously year after year. In the time that I have been working in the field, I have developed with my colleagues a lecture series on management topics, a management rotation, brief projects related to clinical laboratory management, and even a lecture series in operations management taught by instructors from a local business college. For all the projects for which I can claim some measure of success in my career, none of my attempts to teach management to pathology residents has stood the test of time. I believe that the data collected by Weiss and colleagues help us understand this difficulty.

My personal lack of success as a pathology educator on management training notwithstanding, there are many reports from those actively engaged in pathology resident education that include laboratory management as an essential component of training, referencing here only several of many, and a number of those describe in detail a management training experience.

Consider the following highlights of the data in the article by Weiss et al, and keep in mind that in most of the following examples, a major problem is related to the lack of a widely accepted definition of what constitutes laboratory management.

In Table 1 on the time dedicated to lectures on laboratory management and the frequency of exposure to management topics during training, 28% of the programs said more than 40 hours of lecture on these topics occurred during the course of the residency. Forty hours is an average of about 10 hours per year or less than 1 hour per month. No one would reasonably ask someone to be in charge of a multimillion dollar operation of any kind, with more than 100 employees, after less than 1 hour per month of formal training on how to do it effectively. It was reported in a survey of pathology residents from the Massachusetts General Hospital that 8 weeks of full time training in each individual area of laboratory medicine is required for the resident to have confidence in providing clinical consultation. Even with only 50 resident work hours per week on a clinical laboratory rotation, for 8 weeks, this amounts to 400 hours of experience to gain minimal competence for clinical skills. Is only 10% of that required to gain sufficient competence in management to meaningfully discuss problems with colleagues? This highlight also reminds us that it is subjective to determine what constitutes topics in
laboratory management. For example, is a lecture on the sensitivity and specificity of a laboratory assay for the diagnosis of a specific clinical condition included in laboratory management because it does not fall into a topic list of lectures for an individual clinical laboratory?

In Table 2 on the amount of time residents experienced a “junior laboratory directorship,” it is not clear what management roles are fulfilled by a junior laboratory director. I would argue that solving anything except the most trivial management issues in a complex clinical laboratory requires a person with a significant skill set, one that few residents have at the time they are serving as junior laboratory directors. I believe it is easier for residents to make informed clinical recommendations on questions related to anatomic and clinical pathology than it is for them to make informed management recommendations. It would be most interesting to know if the authors obtained any information from the responders to the survey about what management decisions fall to the junior laboratory director.

In Table 3 on when laboratory management is taught during the residency, 15% of the programs indicated that it is taught during clinical pathology rotations and 0% reported that it is taught in anatomic pathology rotations. First, this point highlights that diagnostic knowledge acquisition in anatomic pathology is the primary goal, to the point where management training is completely omitted. This finding also makes a clear point that laboratory management training is considered completely dispensable for pathologists who train only in anatomic pathology. Second, these data raise the question of when the management training occurs in the programs that failed to respond to this question (85% of programs surveyed), since our programs are largely anatomic and clinical pathology rotations.

In Table 4 on the 10 most common laboratory management topics covered, quality assurance is the most common answer. From my own experience, this often means allowing residents to attend quality assurance meetings without any need for their active participation. Other common topics in Table 4 were laboratory inspections and regulatory affairs and accreditation. This frequently involves inclusion of residents in some way in a laboratory inspection preparation or actual performance of an inspection. It is commonly a 1- or 2-time event during training. Another common topic in Table 4 was resident participation in test validation. After years of educating pathology residents, I have found that most new pathology resident graduates are unable to navigate a step-by-step validation of a new test, even in its simplest form. This raises the possibility that for all of these exposures, sufficient management skills for use in the actual workplace are not gained during training and that the exposures are provided primarily to give the residents an awareness of the issues.

In Table 7 on the titles and specialties of the people who teach laboratory management, it is revealing that a large percentage of management teaching in many institutions is done by a pathologist. However, according to the data in Table 8 on major obstacles to teaching laboratory management, this teaching pathologist does not have the time or evaluation tools or the interest or willingness among his or her residents to accomplish this task. Residents frequently comment that if the questions are on the pathology board examination, they will be necessarily interested in it because they need to know the material, but they largely remain uninterested in management topics. One possible reason is that many who have taken the pathology board examination have claimed that correctly answering the management questions requires mostly common sense and not specific facts about the management of a clinical laboratory.

So should this be a matter of concern to us as pathologists? Is it wise to expose residents during residency to management issues without making them competent to actually perform them? If yes, that means we must recognize that we are educating residents to fulfill a supportive role in laboratory management and that a respectful partnership with a laboratory administrator, often formally trained in finance, human resources, and other related topics, is essential.

What about our nonpathologist colleagues who have laboratories or procedural suites to manage?

If we consider what happened to radiology, our sister diagnostic discipline, in the early 1980s, the new imaging modalities redirected the radiologists’ activities to interpretation of the imaging studies. The management of patients and resources in radiology became almost exclusively the property of administrators, or technical or operational directors as they are called in some institutions, many of whom have months to years of formal training in clinical operations. One major reason for the satisfaction of radiologists with this virtually complete focus on image interpretation, presumably, is that radiologists have been paid well for clinical interpretations of the imaging studies, but barely compensated, if at all, for management activity related to radiology services.

The same is true for clinical services that have a large procedural component. It is usually an administrator and not a clinician who has the primary responsibility for developing an endoscopy suite for the gastroenterologists. The gastroenterologists are consulted, but the largest part of the effort is usually made by a nonphysician. Radiology and gastroenterology are 2 fields, among most others, that have moved most or all of their physicians almost exclusively into clinical activities and away from management of operations.

Even more relevant to pathology trainees, there are laboratory management needs from anatomic pathologists, such as directorship of the histopathology laboratory. However, even though many of the same skills are required for management...
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of clinical pathology and anatomic pathology laboratories, anatomic pathology training is, in most institutions, almost exclusively focused on gross and microscopic pathology rather than management. Recall that the data from the report by Weiss et al\(^1\) indicated that there was 0% of time in anatomic pathology rotations for management activities.

It is also necessary to consider the fact that training in clinical pathology in toto, not just for topics in laboratory management, is largely observational without any indispensable clinical service activity for residents, unlike what occurs in anatomic pathology in most institutions. In clinical pathology, most residents watch a thrombin time being performed but are rarely taught how a thrombin time is used in the diagnosis of dysfibrinogemias. In a recent study reported in CAP Today by Hoffman,\(^9\) at Vanderbilt University School of Medicine, who was seeking to determine the actual consultative activity of residents in clinical pathology training programs, the majority of the training programs he contacted refused to discuss the actual consultative activity of their residents or said they had nothing to show him with regard to clinical activities of residents in clinical pathology rotations. If we are not yet teaching residents in clinical pathology how to make a diagnosis using laboratory test results, is it premature to develop introductory training in laboratory management when the core consultative skills are not yet in place?

So the major question that emerges with the publication of these important data is that with 40 hours during an entire residency on laboratory management training, could we possibly entrust a graduating trainee to manage employees and a measurable percentage of the hospital’s budget? Certainly if a graduating pathology resident undertook further educational experiences in hospital administration or business administration, that person would be highly qualified for such a role. Many commercial clinical laboratory leaders and pathologist directors of large outreach programs at academic medical centers have invested in such additional training. However, more than 99% of pathologists do not pursue training in administration. Are we trying to groom them for a role in which they are a knowledgeable partner to a formally trained person in management, or are we actually expecting graduating residents with 40 hours of training in 4 years to manage a clinical operation where incorrect answers can directly lead to adverse patient outcomes? Establishing the goals for management training during pathology residency should come first—and it seems like there is much uncertainty among pathologists about what the goals should be.

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References